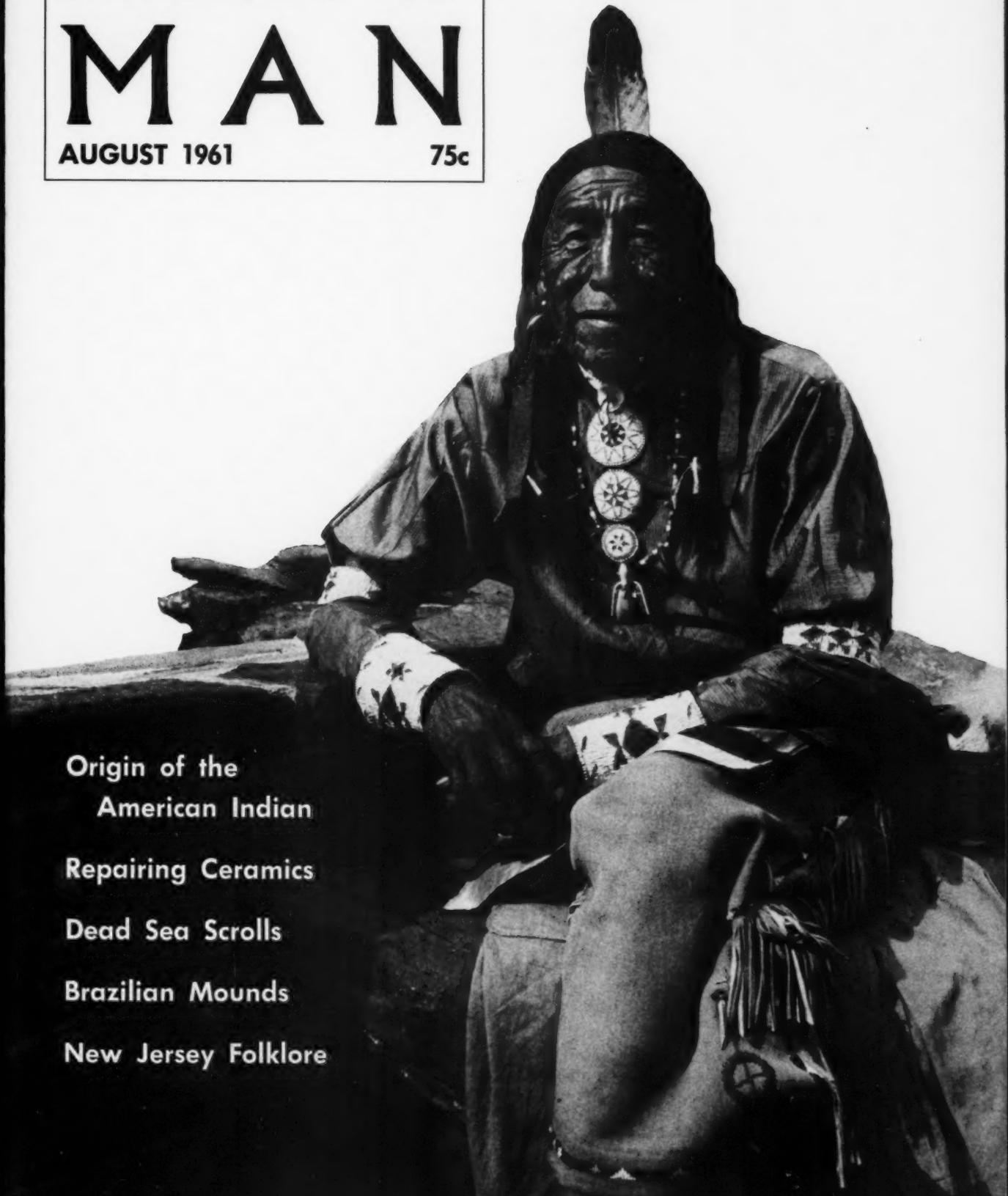


# SCIENCE OF MAN

AUGUST 1961

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Origin of the  
American Indian  
Repairing Ceramics  
Dead Sea Scrolls  
Brazilian Mounds  
New Jersey Folklore

## Editorial



### Archeology is More Than Collecting

The widespread acceptance by anthropologists of the theory that the American Indian has been an inhabitant of the New World for over 10 thousand years is hardly 35 years old. Uniform and significant typologies based upon valid cultural sequences have yet to be worked out in most areas. In some regions the problems are staggering.

Many point types that apparently belong to a common cultural horizon and have only minute variations are sometimes assigned different typological terms. At the other extreme such terms as "Yuma" and more recently "Augostura" include a wide variety of point types that seem to be widely separated in time and space.

One of the problems has been the lack of sufficient sites for most preceramic cultural horizons. This is to be expected because of four obvious reasons. The first is the high probability that the population in very early times was sparse. Second, we can find such ancient buried material only when the ancient surface is exposed or destroyed by erosional forces or other earth movement. The third concerns the preservation of cultural material. Surface sites generally produce only the imperishable lithic material, perishable cultural items being extremely rare in preceramic sites and usually limited to a few "dry cave" locations. Finally, the amateur archeologist distorts the site sample when he selectively picks up artifacts which he considers desirable and rejects specimens that are either not attractive or which he simply does not recognize as artifacts.

We must remember that our preceramic sites are of rare historical importance and that the total supply of site locations is probably extremely small. Once they are all gone, they cannot be replaced. This involves a double duty. The first is to see that as many sites as possible are protected from the destructive forces of man or nature, and the second is that each site excavated produces a maximum of information.

An example of what too often happens when poor records are maintained follows:

One of the more frustrating experiences in museum life is to find a seemingly important discovery in the storage area of the museum and later to find that the items involved lack the proper information to give the objects maximum importance. Such an experience occurred recently when I found an unmarked shoe box which contained 47 "spearpoints" reportedly plowed up at the turn of the

century in the Piney River region of Texas County, Missouri.

The scanty information available was stored with the artifacts and these notes indicated that the artifacts were unearthed from a ceremonial cache. Cryptic and inadequate notes indicated that the artifacts were patterned, possibly in the design of a sunburst, when uncovered by the plow. It is suspected that the cache was culturally connected with the Ozark Bluff Dweller horizon during the Intermediate Period that existed about 1000 A.D. If this is correct, the cache represents a fairly extreme eastward extension of this cultural horizon that was concentrated in the Ozark Mountains of Arkansas and Missouri.

The written information stored with the artifacts was just sufficient to make the material interesting but did not contain enough concrete data to make the specimens archeologically important. Unfortunately this condition exists with many private and public collections and all too often the error is not discovered until the original collector has died and the necessary basic information is irretrievably lost.

The particular example of the ceremonial cache was selected as an example in cultural destruction because the year of the discovery probably protects, by death, individuals involved in the discovery, excavation, and handling of this ceremonial cache. At the time of the acquisition of the artifacts, the W. H. Over Museum did not exist and no person associated with it was ever in a position to locate the needed additional information. The Over Museum, part of the State University of South Dakota, is one of the best organized museums of moderate size in the Great Plains region, and records are maintained in a meticulous fashion.

This paper was not designed merely to expose the actions of unknown individuals involved with the ceremonial cache, but to serve as an object lesson to those who may be patterning their archeological activities with the same disregard for "bothersome" records. Archeological collectors, professional or otherwise, who fail to maintain adequate notes, disturb and distort the cultural heritage of the past and should be regarded and treated as cultural vandals by all serious students of the field.

George A. Agogino, Ph.D.  
Editorial Advisory Board

### BYU Expedition Now in the Field

Under the direction of Dr. M. Wells Jakeman, the 6th BYU Archeological Expedition to Middle America left recently to conduct excavations at ancient sites in the Xicalango jungle region of the Gulf Coast, State of Campeche, Mexico.

This expedition marks the fourth sea-

son of explorations by the University at, and in the region of, an ancient walled city now called Aguacatal. Discovered in 1943 in the jungle country of southeastern Mexico, Aguacatal has been tentatively identified by Dr. Jakeman as the famous walled city Tullán mentioned in the early chronicles of Mesoamerica. Other members of the staff are Carl Hugh Jones, assistant director; Ray T. Matheny, graduate student in archeology; and M. Harvey Taylor and Lawrence O. Anderson, undergraduate students in archeology.

The main purposes of this expedition are to provide advanced training in archeological field methods for students on the staff and to continue the scientific exploration of the ruins of Aguacatal. The latter undertaking includes further mapping of the ancient city; test-pitting of the great encircling earthen wall discovered in 1958, to learn its date and manner of construction; stratigraphic test trenches in the plazas, to fill in the gaps in the occupational history of the site; and probes into some of the numerous temple-pyramids for the possible discovery of additional monuments or art works.

A special project at Aguacatal will be to set up pumps for the purpose of lowering the water table at certain points. This will permit the sampling of possible sherd deposits at lower levels, in an effort to carry the occupational history of the site back to its beginning. The low elevation of the region with the consequent high water table has so far prevented the record from being carried down more than a few inches below the surface.

Three previous BYU expeditions have explored ruins at Aguacatal and vicinity. Those of 1948 and 1958 investigated Aguacatal, while that of 1956 excavated at Cerrillos. (see p. 177)

### Romans in America

Dr. Robert Heine-Geldern in a letter [to Dr. Carl B. Compton, Director of the Instituto Interamericano, 5133 NT, Denton, Texas] says of the small ceramic head found by Prof. Garcia Payon at Calixtlahuaca, in Mexico: "There can be no doubt that it is Romano-Hellenistic of about 200 A.D." He further states that he has been told of two other Roman items found in Mexico; one is in a museum in the U.S. and the other is in a German museum. Also a large hoard of Roman coins was found in Venezuela in recent years. We [Dr. Compton] would like more information about these or any Roman or presumed Roman items found in the Americas. Of course Roman finds in the Americas would be of more importance indirectly than directly since the Romans, however many contacts, did not affect the culture patterns of the Americas. (From *Interamerican*, Vol. 8, No. 5, May 1961, p. 1.)

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## OFFICIAL MAGAZINE

## NATIONAL ASSOCIATION OF LOCAL ANTHROPOLOGY CLUBS

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SCIENCE OF MAN

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# SCIENCE OF MAN

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## Excavation of a Brazilian Shell Mound



View of portion of excavation with fort buildings in background.

By Alan Lyle Bryan  
Idaho State College Museum

The author was invited to work in southern Brazil by Professor Luiz de Castro Fariá, chairman of the Division of Anthropology of the National Museum in Rio de Janeiro. Most of the expenses were met by a Latin American exchange scholarship given to the author by the Organization of American States. Additional travel in neighboring South American countries was allowed by a supplementary grant given by the Doherty Charitable Foundation of New York City. Part of the expenses of excavation on a Brazilian army coast artillery fort in the State of Santa Catarina was met by the National Museum. All material collected has been deposited in the National Museum in Rio de Janeiro. John Gallovich, another American archeologist, assisted the author during the period of excavation and is now supervising the study of pottery collections from the Forte Marechal Luz site, at the National Museum. Mr. Bryan has returned to Harvard University to complete his doctoral dissertation this year.

Shell mounds, kitchen middens, or to use a Brazilian Indian term, *sambaquis*, are found along most of the world's sea-coasts and many river margins. With few exceptions such deposits were piled layer upon layer in successive occupations by man dumping his refuse, largely composed of unwanted shells left over from his many shellfish dinners.

The shell mounds along the south coast of Brazil are the tallest in the world, sometimes reaching 60 feet in height. Most of the large shell mounds in North America meander along the shore margins, often for a mile or more, but they seldom are over 15 feet high. We can only speculate as to the reasons why they should be so high in Brazil. The difference appears to be due to cultural factors. That is, the occupants of the Brazilian *sambaquis* deliberately dumped their refuse so that their dwellings could be well above the surrounding countryside. Perhaps it was simply to be able to see better—to see game or schools of fish or to see human enemies. Perhaps more

importantly the plague of mosquitoes from the surrounding swamps was more bearable up where the breeze was stronger.

But what of interest is to be found in these huge refuse dumps? Prehistoric man lived adjacent to or usually on top of his garbage deposits. This may seem unlikely to many persons but a visit to a *favela* (shanty town where poor people live in all large Brazilian cities) will confirm the statement that much of man's filth and waste is even now discarded near his home. Unlike modern urban dwellers, primitive man simply moved to another locality when the odor became too offensive.

Wherever man lives he discards not only food remains but also tools and other artifacts which are broken or otherwise unusable. Sometimes he also loses or hoards more valuable items. Many people bury ornaments and tools with their dead which are frequently interred in the same refuse dump on which they live or at some temporarily abandoned

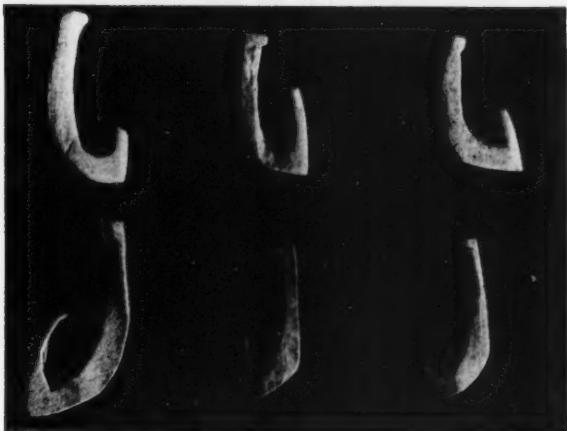


Fig. 1. Bone fishhooks, about natural size.

occupation site.

These artifacts, whole or broken, are what the archeologist looks for. They form one of the more important sources by which he attempts to reconstruct the way of life of the former occupants. The archeologist also must note such things as the kinds and relative amounts of food remains by preserving for expert identification the shells, bones, and charred plant remains from each natural layer. He also carefully excavates and preserves the human skeletons so that the methods of interment and racial characteristics of the former occupants may be determined.

In order to recover the maximum amount of information about the former occupants, the excavator must work with exacting care. In the *sambaquis* at Forte Marechal Luz all material was excavated with a mason's trowel and dustpan and then transferred to a screen by plastic buckets. This was necessary because many of the bone and shell objects were very small and difficult to distinguish from the surrounding matrix. Most important of all, the archeologist must excavate from the surface downward in order to recover information on the sequence of occupation by different people at different times. The obvious idea that the overlying material was deposited after that which lies underneath is the fundamental principle by which the archeologist assigns relative age to the artifacts he recovers.

In recent years other scientific methods have been discovered by which absolute dates can be assigned to the sequence of cultural deposits. The best perfected method so far devised requires that samples of charcoal from man's prehistoric fires be carefully collected and then protected from radioactive particles present in the air. All living matter contains a physical isotope of carbon, known as carbon 14. In carbon 14 (or radiocarbon) dating, charcoal is the best ma-

terial to use. At the death of the animal or plant from which the charcoal originally came, this radioactive isotope of carbon begins to lose subatomic particles at a known rate. Using an instrument similar to a Geiger counter, the rate of radioactive decay (emission of radioactive particles and the eventual change of the carbon 14 into ordinary carbon) may be determined mathematically. From it the time of death of the animal or plant can be determined.

Several charcoal samples will be dated from the *sambaquis* at Forte Marechal Luz so we should be able to date quite accurately such events as the introduction of ceramics into the area, the time of initial occupation of the site, and the time when the site was finally abandoned by prehistoric man.

The presence of ceramics in deposits up to a meter deep was the reason why the Forte site was chosen for test excavation. Previously, archeologists had thought that all *sambaquis* on the Brazilian south coast had been abandoned before the introduction of pottery. A radiocarbon date of more than 7,000 years for a *sambaqui* near Santos substantiated this belief because the earliest known pottery in South America, in Ecuador, has been dated as 4500 years old. Pottery is pre-

sumed to have spread southward from this early center.

The Tupi-Guarani-speaking Carijós, who occupied the coast of Santa Catarina in the fifteenth century, told the first European explorers that the people who lived in the area before them were so ignorant that they didn't even make pottery. For these reasons it was assumed that all pottery found in the upper deposits of *sambaquis* had been left by *caboclos* (Brazilian peons) who camped on these artificial hills in recent times. This assumption seemed reasonable because *caboclos* continue to make plain pottery similar to the types found in the *sambaquis*. But the fact that plain pottery was found throughout the upper four layers at the Forte site made these assumptions appear questionable because *caboclos* did not dispose of shells in the same manner as the prehistoric Indians.

Subsequent excavation showed that the plain pottery at the Forte was definitely prehistoric. Furthermore, the very fact that only a few sherds were decorated indicates that it was not made by the Carijós who manufactured large pots of entirely different shapes and decorated them by painting and incising. We did not even find any decorated pieces obtained through trade. We can conclude, then, that the latest occupants had abandoned the site before the Carijós arrived.

On the basis of the above conclusion, the known date of 4500 for the earliest pottery in Ecuador, plus a guess of the time it took for the idea of pottery to reach southern Brazil from Ecuador, I estimate that the last occupation of the site was between 1500 and 3000 years old. We must await the radiocarbon dates for confirmation or refutation of this guess.

There is much less evidence on which to base a guess of the time of initial occupation of the site. In fact we probably did not encounter the earliest occupation because most of the site had been torn away for road cover before we commenced excavation. It is possible that the oldest occupation encountered,

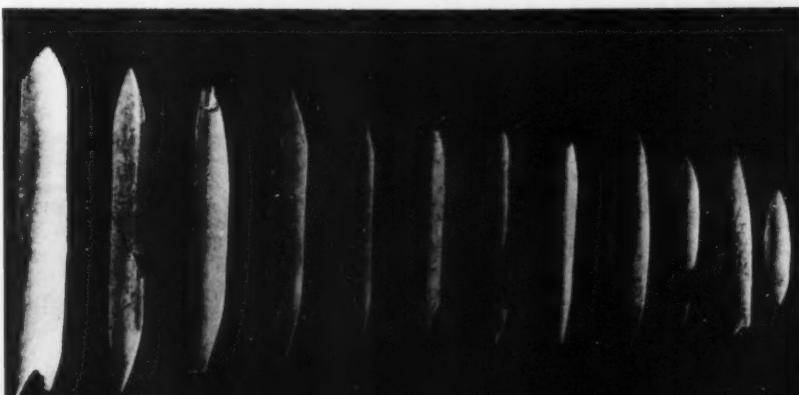


Fig. 2. Bone bipoints. Possibly toggling fishhooks or projectile points.

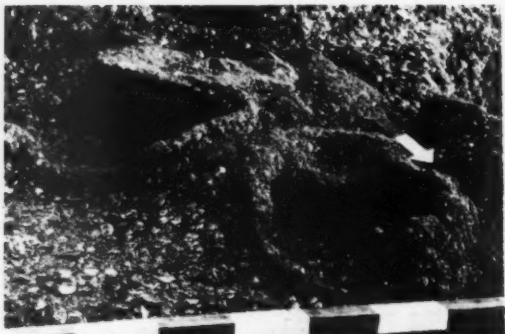


Fig. 8. Close-up of unbaked clay ovens showing remnants of lids which were destroyed when the ovens were opened to get the cooked food.

almost 20 feet deep, was as early as 7000 years ago. The information we collected indicates that several groups with quite different cultural traditions occupied the site at different times.

Many things other than ceramics were recovered. Perhaps the most interesting is a series of curving fishhooks cut and gouged out of mammal bone splinters. (Fig. 1.) Slender splinters of bird and mammal bone cut to sharp points at both ends (Fig. 2) may have been used as points for arrows or possibly they were suspended slightly off center at the end of a fishing line. If a fish grabbed such a device, the bone splinter would twist or toggle in its throat and act as a hook. Other evidence of fishing, an economic activity which must have been very important judging by the large numbers of fish bones we collected, include line weights fashioned out of baked clay or pebbles.

Other types of points for arrows or other projectiles (Fig. 3) were quite rare, a fact which may be correlated with the scarcity of remains of land mammals or birds. On the other hand, the correlation may be with the possibility that most points were made of hardwood, which was not preserved in the damp Brazilian climate.

Although sea mammal bones, especially

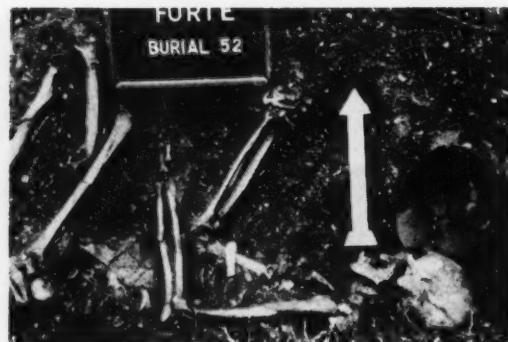
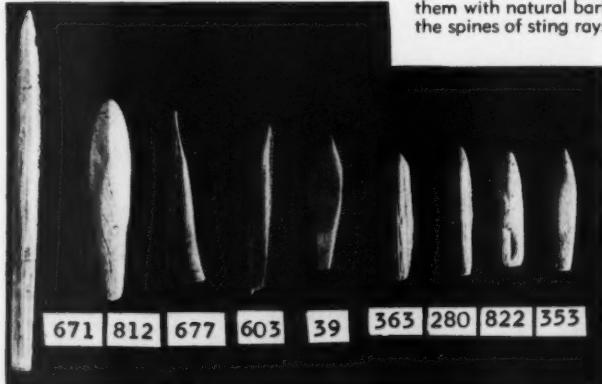
of whales, were encountered frequently, it is unlikely that these animals were hunted. Rather, the remains of dead or stranded individuals undoubtedly were scavenged from the beach.

A large flat whalebone artifact with a drilled hole near the center may have been a spindle whorl for spinning thread. (Fig. 4.) Many fish vertebrae were found which had been perforated centrally. (Fig. 5.) Some of these may have been used also as spindle whorls.

Ornaments with drilled holes for suspension were made of teeth of various animals, especially the peccary and shark. (Fig. 5.) Incisor teeth of a rodent called a *paca* were used as chisels for working wood. Usually the jaw was left intact to provide a convenient handle. (Fig. 5.) Many shark teeth were found which showed evidence of having been worked upon near their sharp tips. (Fig. 6.) Judging from the various marks of use, some were apparently used as drills or reamers. Others may have been used as chisels or gouges. It is also possible that many of these naturally curving teeth were hafted on a wooden shaft to form a fishhook.

Many stone tools were also recovered. The majority of these were water-rolled cobbles used as hammers for various purposes. Another large group of similar cobbles have shallow circular depressions near the center of one or more faces. Some of these depressions appear polished

Fig. 3. Bone projectile points. Four of them with natural barbs were fashioned from the spines of sting rays.



Body in typical flexed position. Small flat-bottomed pot placed adjacent to skull.

while others have been roughened. Sometimes one cobble with a polished cup and another with a rough concave surface were found lying next to each other.

The Nhambiquara Indians of Mato Grosso still use a pair of such implements with which to crack cocos. If the coco is fresh they eat the meat; if not, a beetle larva is equally palatable and perhaps more nutritious. Usually the same implement shows evidence of use as a hammer and a nutcracker (quebra-coco). Many of these multipurpose tools also show evidence of grinding, smoothing, or polishing on their faces. Perhaps such polishing was caused by preparation of plant and animal fibers for food.

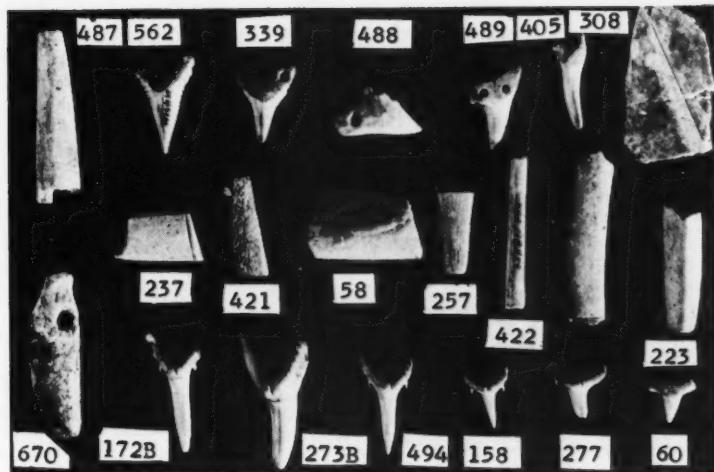
Another class of stone tool is a large series of axes of various sizes. Some of the small pieces with ground bits could have been used as chisels, but the entire series implies the working of wood. Thus, even though we did not discover perishable textile or wooden artifacts, the presence of spindle whorls, axes and chisels implies that objects were made of these materials.

One thing the archeologist must always try to determine is the manner in which artifacts were manufactured. The series of axes tells a particularly clear story which can be related as a sequence of events:

(1) A flattened waterworn cobble of basalt rock was picked up on the beach.

Fig. 5. Shark teeth artifacts and pieces of worked bone of unknown use.





Paca tooth chisels on the ends; the one on the right has been inserted into a bird bone handle. Three teeth altered for suspension as ornaments.

(2) It was held in the hand while the edges were struck forcefully with another rock, removing a series of large flakes.

(3) After preliminary flaking into a leaf-shaped object, the high spots were reduced by rubbing the piece on another roughly surfaced rock.

(4) Finally, the faces, edges and bit were completely ground down to form a sharply bitted implement which could be hafted onto a wooden handle.

All stages of manufacture are represented in our collection from the Forte site. In addition, the hammerstones used to flake the axes into shape and the rocks used to finish the axes by grinding were found at the site. Most of the work of shaping by grinding was done upon large boulders on the beach in front of the sambaquis. Many elongated basin-shaped troughs and narrower grooves can be seen running at various angles on the upper surfaces of the boulders. These are the telltale marks left by the people who here shaped and sharpened their axes.

An interesting series of unbaked clay bowls of various shapes and sizes was formed directly in one preceramic shell layer. (Figs. 7 & 8.) Nearby piles of fish bones, ash and cobbles cracked by

Fig. 6. Perforated fish vertebrae. Possibly used as spindle whorls.

heat reveal that these features formed a prehistoric kitchen. Apparently fish and probably root vegetables were placed inside the pans along with some water and rocks previously heated in nearby fires. Remnants of clay lids show that the food was sealed inside these "dutch ovens" and allowed to cook.

Other clues also reveal the ingenuity of the former inhabitants. Faces of large whale vertebrae were hollowed out for use as charcoal burners. In one case a circular, burned scar was found on a large whalebone which was the same size as a nearby "charcoal burner." Probably the covered burner was used to preserve hot coals over night, a real labor-saving device in a pre-kitchen-match era.

Many readers may feel that the artifact yield was insufficient to warrant the expenditure of so much time and money for excavation. The primary goals of archeology are to discover how prehistoric man lived in relation to his varied environments, and how he developed his culture through time. In order to accomplish these goals, the archeologist must find and excavate all types of sites, no matter how unspectacular they may be.

Actually the *sambaquis* at Forte Marechal Luz had a much higher yield of artifacts than any other excavated *sambaqui*. Madame Emperaire, a French archeologist, has excavated a 60-foot high *sambaqui* about 50 miles north of Forte

### Alan Lyle Bryan A Biographical Sketch

Alan Lyle Bryan, the author of the accompanying article on methodology for the excavation of a Brazilian shell midden, is a native of Friday Harbor, Washington, on Puget Sound. He studied at the University of Washington for his B.A. and M.A. degrees, and went to Harvard University for his doctoral work. He is the recipient of a number of scholarships, fellowships, and other honors in anthropology.

Besides his master's thesis, *An Intensive Archaeological Survey of Northern Puget Sound*, and his doctoral dissertation, *Paleo-American Culture History*, both to be published soon, his works include a number of published articles on archeology in technical journals from 1952 to the present. Two of his published papers have been in Portuguese and another, a monograph, is to be published in that language within the next few years.

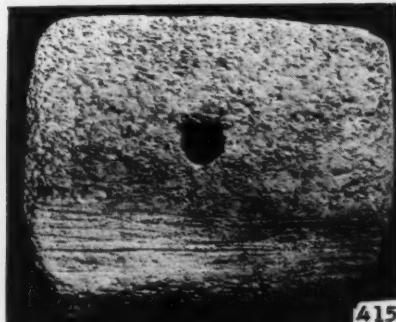
Marechal Luz. After four months' work she was satisfied with the information she had obtained from a dozen or so artifacts plus the occupational features she found within the mound.

Negative evidence like this is significant. Apparently Sambaqui Man had a very simple material culture because he was so far removed from cultural developments going on elsewhere in America. Man is an inventive animal, but his new ideas must be built upon the body of facts available to him. These facts may be present in his local culture but most ideas are borrowed from neighboring people. If a local group lacks contact with people having different ideas, the local culture will develop very slowly.

The people who occupied the *sambaquis* were able to maintain their existence by eating shellfish and fish. Simple

CONTINUED ON PAGE 174

Fig. 4. Flat perforated whalebone object. Possibly part of a spindle whorl.



# SIGNS OF LIFE

By Rex Eidson



Fig. 39 Wakemap Mound. Items taken from this mound by University of Washington archeologists during the last days of its existence (this picture taken three weeks before inundation), produced some artifacts identified as being about 16,000 years old. Altogether, between 15,000 and 20,000 artifacts were removed in less than two years' work. At one time, it is believed

this settlement had a non-nomadic population of about 5,000. Scarcity of pottery fragments places the mound in the Stone Age. On the cliffs in the background, far left, are still to be found many ancient pictographs, paintings made with unbelievably weather-resistant pigments.

**WHEN THE LEWIS AND CLARK EXPEDITION** worked its wet and tortuous way down the north bank of the Columbia River shortly after the turn of the 18th century, it found a sad and decadent state of affairs at the Indian settlement of Wakemap.

Some 15 years before, an epidemic, which may have been the common cold, had broken out at this and other settlements along the great river. Indians had died in great numbers and the noise of their mourning could be heard miles away from the river. For more than a hundred years thereafter, Wakemap was a forgotten location. The few remaining Indians eventually left the site. When archeologists from the University of California looked it over in 1926, it had become no more than an extensive mound. It was considered merely a curiosity for many years after that.

It was not until the U.S. Army Engineers, constructing a great hydroelectric and flood control project near The Dalles, threatened the mound with a watery

grave, that anyone became really serious about investigating Wakemap. It was at this time that the University of Washington's anthropology department sent a team of archeologists to the scene.<sup>1</sup>

Suddenly there was a burst of activity. It was in feverish haste that digging finally commenced, and it was aided by supervised amateurs. A five-year job was telescoped into less than two years, from the fall of 1955 to the early spring of 1957. In a relatively short time, more than 15,000 artifacts were removed from the ancient Indian townsite. Precision cuts into the mound revealed that Indians had lived there continuously for hundreds of years. At times, the community was large and flourishing containing, in its heyday, something like 5,000 inhabitants.

As the scientists worked their way downward, they found that the location had been used at various times, before the last continuous period, for several thousands of years. Nearby, an amateur picked up a fine Folsom point. In addition

to digging and sifting, some of the staff members were kept busy photographing, sketching, taking classical rubbings, and even making wax and plaster molds of the best petroglyphs.<sup>2</sup>

This was one facet of the Wakemap culture. But down across the Calwash Bottoms, an area some half-mile wide of dry, sandy soil generously overgrown in places with willows, was a large, high basalt formation. Near the center were two large, open holes in the rock formation. These had been used, probably as storm shelters.

Here among other evidences of life, were smooth holes about a foot or so in depth. These were probably used by the squaws to grind grain into crude flour. On the flat surfaces of the walls of the shelters and on the cliffs around them there were literally hundreds of petroglyphs. Carvings of many different periods could be seen. Some of them could be classified as simple works of art.

Down close to the water level, almost due south of Wakemap Mound, was one

huge carving. It was of extreme antiquity but still showed deep chisel cuts. It had been called the *Water Devil*. Apparently it had been carved to represent one of the giant turtles which are said to have inhabited the river at one time. They may have supplemented salmon and wild game as food.

Art has been said to reflect the times and conditions of the individual artist. This is especially noticeable in the work of the people who dwelt in the mid-Columbia in times long gone. Though we know little about these people, the markings they left in hard stone let us know that they were there. From these signs we may deduce many things. Particularly is it evident that their rugged, often dangerous, environment influenced their first manifestation of artistic emotion.

It is almost impossible for us who have all sorts of modern tools with which to work, to imagine the difficulties encountered by these remote, Stone Age people in expressing themselves. One of the distinctions between the lower animals and man is the desire and the ability to express the feelings which well up from within. This can be seen in the cave paintings in Spain and in the sculpturings of the Samoan Islands, the Gobi and Sahara Deserts. In every part of the world, in fact, there is evidence that man must express himself.

In very ancient times, he had practically nothing with which to work except raw emotions and determination. How many of us, to express ourselves, would labor months to scratch a few crude marks into black basalt?

Because we have no key to the real meaning of many of the abstract symbols we see on the rocks and cliffs, we must place them in the category of prehistoric art. Art may be defined here as the physical evidence of the innermost stirrings or impulses of a people to express

themselves. Like music, true art needs no language; rather, it is above language as it is ordinarily read or spoken.

I have come to know this as a land of past violence and cataclysmic upheaval. It is a land of stark grandeur and vastness, rivaled by few places in this country. The mid-Columbia region embraces some 20,000 square miles. Today, for the most part, people are conspicuous by their absence. The area is almost ten times as large as the State of Delaware. Were it not for the carvings in the hard basalt, we would not have the slightest inkling that people had inhabited the wild and forbidding territory for thousands of years. On this evidence, it is difficult to agree with the conclusions reached by certain experts who claim that this land was first peopled only a short time before the beginning of the Christian era and then only by a few nomadic tribes.<sup>3</sup>

The mountain peaks of the region are magnificent, several of them well over 10,000 feet high are blanketed by eternal snows. These peaks, however, were all created in the furnace of volcanic eruptions. Several of them, notably Mt. Hood in Oregon, still retain smoking fissures. A fragment of charcoal found imbedded in the wall of a lava tube on Mount St. Helens, a few miles north of the Columbia River in Washington, has been dated by the carbon 14 test. The charcoal was proven to be 2000 years old, plus or minus 100 years. This was much later than had been calculated for the last



Fig. 40. Here on the north side of the Seattle, Portland, and Spokane railway track, a great basalt pillar with non-Indian type sculpture of human face lay half buried. It appears to be older than Water Devil, as old as any of the petroglyphs in the area. The pillar is about 8 feet by 2½x3 feet. Archeologists made numerous rubbings of the face. The nose is broken off. Wakemap Mound was within a stone's throw, immediately south of track.

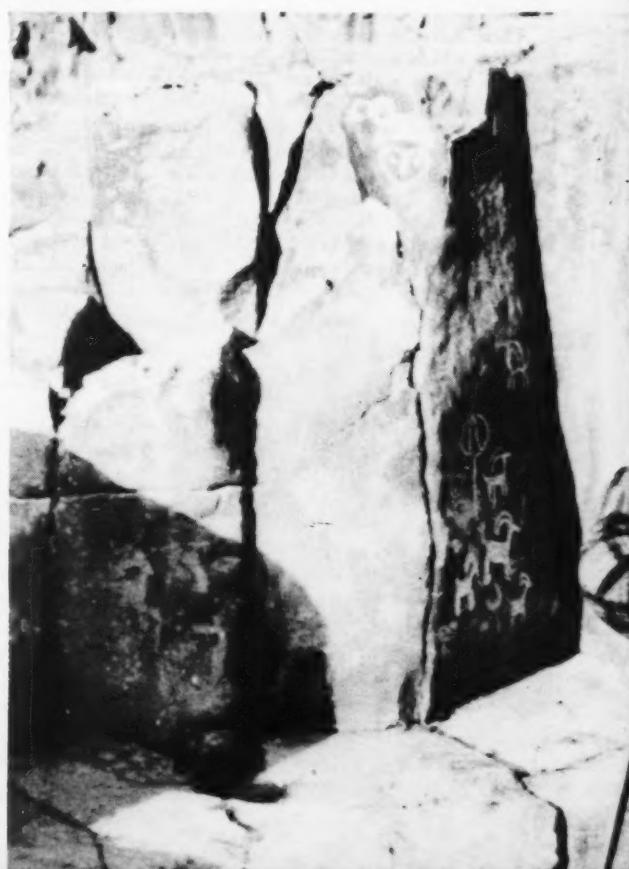
lava flow in the region.<sup>4</sup>

The Columbia River plateau through which the Columbia River gorge has been cut to a great depth, is an almost unbroken basaltic sheet over hundreds of square miles. It has been estimated by one geologist<sup>5</sup> that the lava rock is more than 5,000 feet thick in some places.

There have been many guesses and conjectures of the meanings behind the



Fig. 41. Making photographs of shadowed portion of wall in shelter hole by using reflector. Douglas Savoy (now in Peru) is at camera, Johnnie Dailey holding the reflector. In the enlarged picture at the right, note the odd, heart-shaped head at the top. The hat worn appears quite modern. The other figures appear to be long-horned goats.





Time and Sun Symbols

Fig. 43.

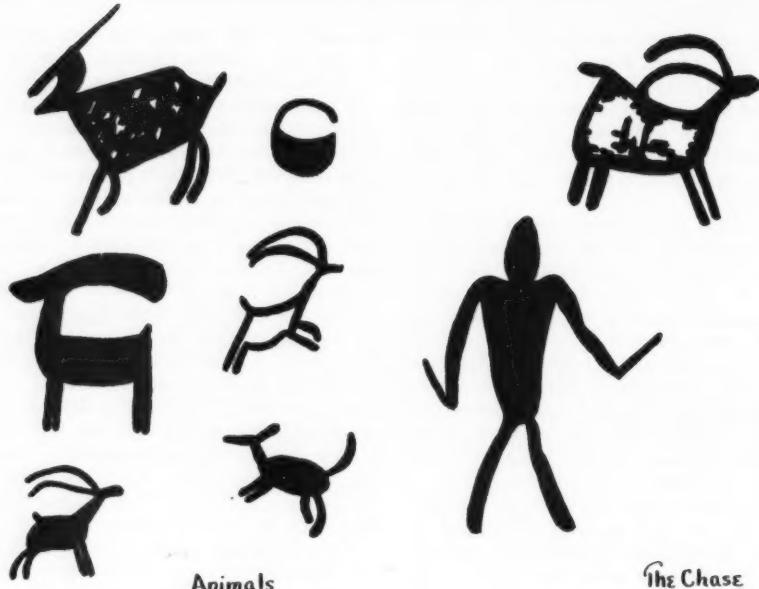
mid-Columbia petroglyphs. However, the fact remains that they are just guesses. No way has been found to determine scientifically what any of the carvings mean except those which, because of their very nature, are patently obvious, i.e., hunting scenes, animals in various poses, symbols for the sun and moon, and so on.\*

There have been several puzzling discoveries which tend to make one suspect that there was a time long ago when a fairly high state of culture did exist in this general area. Perhaps it was at the time when the great inland sea covered much of south central Oregon and it was a place of a great deal of fishing. This was before many of the mountains were raised and before the vast basaltic lava flows were laid down.

Two such intriguing instances come



Fig. 42. This strange series of small circles connected by diagonal (sometimes looping) lines is somewhat like the Code of Lotus on Buddhist baptismal stones. Note the crude devil mask with wavy cross. The large white "45" was painted by archeologist from University of Washington. It is part of the system used in cataloguing.



Animals

Fig. 44.

The Chase

Fig. 45.

to mind. One is the tiny but finely sculptured glazed ceramic figurine (it has a singularly Oriental appearance) which was pumped up at the end of the last century near Nampa, Idaho, from the *underside* of the basalt through a four-inch test pipeline.<sup>7</sup> The other is the 1938 discovery near Fort Rock in central Oregon, of a pair of beautifully plaited grass sandals. They were removed from dry sand which had preserved them perfectly for thousands of years. In fact, the radioactive test indicated just how many years—no less than 9,000!\*

There is one other bit of evidence which, though not real proof, makes one wonder. This is the extremely ancient tracing on a crumbling black basaltic cliff some forty miles east of the now submerged Wakemep site. It is a strange and complicated figure about 14 inches high and some 8 inches wide. At first glance, it appears to be a representation of the ancient Hindu god Siva. It may have no relationship to anything in India, but if it should ever so be proved, a whole host of questions would arise immediately: Who made the carving? Why? When? How did he get to this spot? What became of him? Was he a lone wanderer?\*

Having such mysteries to mull over makes interesting the study of the mid-Columbia petroglyphs which still remain above the water. Who knows? Some day someone may stumble upon a key

which will unlock these mysteries. In the meantime, we must refrain from irresponsible guessing; we must work with what we know.

#### REFERENCES

1 Responsibility for the last-ditch battle to secure adequate funds to do a creditable job of preserving some of the vestiges of a vanished culture must go to the late Senator Richard Neuberger; Lt. Col. Francis G. McBride, Corps of Engineers; Neal A. Butterfield, Portland office of the National Park Service; and Dr. Luther S. Cressman, head of the Department of Anthropology, University of Oregon. Today, a great lake 27 miles long inundates this whole area. At the site of the Wakemep petroglyphs, the water is said to be some 80 feet deep.

2 A superior type of wax impression for large glyphs was perfected by James Hansen, a Vancouver, Washington, sculptor. Members of the Portland Art Museum and the Oregon Museum of Science and Industry state that reproductions from Mr. Hansen's casts are excellent for student work.

3 See articles on origin of American Indians elsewhere in this issue.

4 The fragment was removed and taken to Seattle for testing by Dr. William Halladay, prominent thoracic cavity specialist and a nationally known speleologist who published a book on caverns in 1960 and whose articles on cave exploring often appear in the official journal of the National Speleological Society.

5 W. J. Miller.

6 One of the finest and most realistic books yet published regarding these ancient peoples is by Emory Strong, "Stone Age on the Columbia River."

7 The figurine is now in an art museum. There is no way to date it except, perhaps, by the polarization method which is somewhat dubious. But the southern Idaho basalts are at least 2000 years old and possibly much older.

8 In 1938, while digging in a dry sand cave near Fort Rock, Dr. Cressman uncovered the pair of sandals which immediately created widespread stir and much speculation in scientific circles. The sandals were subsequently dated at the University of Chicago by the carbon 14 process.

9 This is the figure mentioned and speculated about in my much debated article, "Asiatic Rock Carvings in America?" *Fate Magazine*, June 1960. It ties in rather strangely with the large petroglyphic monument now in front of the Portland City Hall which was cut from a Columbia River cliff some years ago near The Dalles. The clearly defined markings are Oriental in nature. A visiting scholar from India, studying at the University of Oregon, identified the pattern on the stone as ancient Buddhist. He said that it was undoubtedly an old baptismal stone, and added that stones of this type were used in India long before formal writing was invented. There are many of the stones in India, he said, always found along streams and rivers but in the memory of man, they have been put to no use.

# Inscription Canyon Petroglyphs

Text and Photos by Mary Frances Berkholz

The great Mojave Desert of California has many areas where prehistoric Indians carved their signs and symbols. One such region is in the northern extremity of the Black Mountain-Opal Mountain region. Here, where a wash has cut a broad, shallow canyon in basalt, will be found hundreds of interesting petroglyphs.

This region is believed to have been one of the main Indian trails across the Mojave. I make no attempt to interpret the significance of the petroglyphs here or farther down in Black Canyon. My duty is simply to photograph and map such sites, letting the professional and amateur archeologists try to put the facts together.

Inscription Canyon, as this location has been called, makes a sheltered camp site away from the heavy winds so common

to this desert region. From the mouth of the canyon you can look northeast across the Superior Valley. Many playas are in evidence and it requires little imagination to picture the Indians camped here. The number of carvings seems to indicate they remained here over long periods of time. Perhaps the antelope were plentiful and the playas were little lakes. If this were so, it would have been an ideal camp site for Indians of the past.

The forces of erosion are much in evidence as the large chunks of basalts are weathering and falling to the floor of the wash. In the not too distant future little will remain to show that the Indians were ever here at all. Due to the many rather complicated petroglyphs certainly interested parties should visit the area and make photographic record of the carvings.

Fig. 51. Inscription Canyon on the Mojave Desert. The author's car is parked on the sandy wash.

Fig. 52.

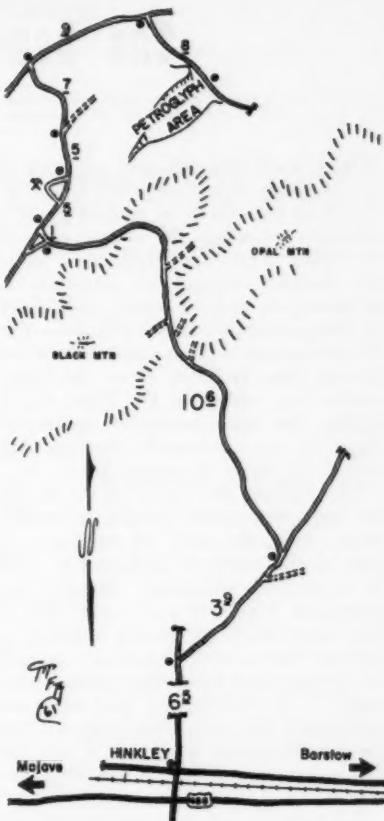


Fig. 55.



Fig. 56.

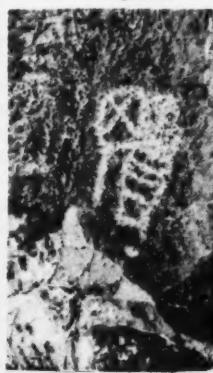
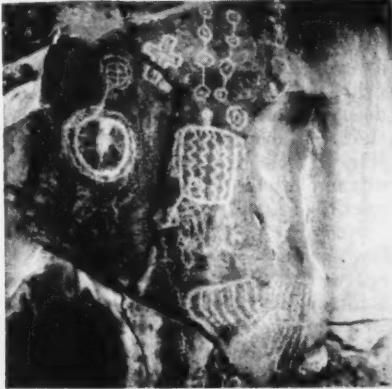


Fig. 57.



# The Dead Sea Scrolls and Archeology

By Joseph E. Vincent

WHILE MANY READERS may not think of the discovery of and work being done on the Dead Sea Scrolls as archeology, it is actually archeology in every sense of the word. True, the Scrolls were found by Bedouin smugglers, untrained as archeologists, and the source of the finds is often uncertain or even unknown. The Scrolls do represent, however, the work of ancient Man as much as do the Babylonian clay tablets or the Maya hieroglyphs. One must remember that archeology is not necessarily digging, but rather, the study of ancient Man.

The finding and study of the scrolls are important archeologically in several ways. First, the study of religion is a part of the study of anthropology and of its subfield, archeology. Religion has played an important part in the life of Man ever since he started building a culture. Our present Christianity as well as Judaism and Islam had their beginnings in the remote past, just when no one would dare say. The discovery of the Scrolls reveals a period in our religious history in which a gap long has existed.

For most of our religious history we have been dependent upon the several versions of the New and Old Testaments, the Islamic Koran, and the Jewish Talmud, Targums, Mishna, Gemara, etc. A gap of nearly four hundred years exists between the Old and the New Testaments. None of the books of Judaism and Islam can fill that gap, either. Hence, from a religious aspect alone, the Scrolls are very important, as they help close that gap.

From a cultural point of view, apart from the purely religious, the Scrolls are important. They tell us of a great movement that existed about which we knew almost nothing.

From a doctrinal point of view, they are particularly important. The New Testament is a translation and copy of earlier documents, copied and recopied over and over again, sometimes not too accurately. Because of this copying and recopying, and translation and retranslation, there are many different versions of the Bible. Scholars have known for years that in all of them there are many, many inaccuracies.

Among the Scrolls are the oldest copies of the early religious documents yet found. Being older, they have been copied fewer times and therefore should have fewer inaccuracies. Furthermore, the finding of religious books that were not known to have existed, has shed much light on the early doctrines and teachings of the people who were the immediate predecessors of the New Testament

personages and writers.

## *Discovery of the Scrolls*

In 1945, a group of Bedouin smugglers was traveling near Wadi Qumran, seven miles south of Jericho and on the northwest shore of the Dead Sea. With them they kept goats, partly to disguise themselves as goatherds. According to the most prevalent story, how truthful it is we do not know, a young goatherd lost one of his flock. He chased the goat into a cave and stumbled onto the most important find of the age, the ancient scrolls. The cave is now known as Qumran Cave 1 (abbreviated in archeological literature as 1Q). Nationally being interested in treasures, the Bedouins eventually sold the Scrolls and vase-containers. Not realizing what they were, however, they received only a small percentage of their real value.

It was not until some of the Scrolls came to the attention of Metropolitan Samuel that the world became aware of the real value and true nature of the find. Thus the Dead Sea Scrolls, more accurately termed "Qumran Literature" (abbreviated QL), came to the attention of the world—to the attention of the Bedouin treasure hunters as well as to the archeologists and scholars.

Since the initial discovery, some 280 caves have been examined near the Dead Sea and in the Judean Desert. It is the combined yield of all of these caves and other finds that we designate as one unit, the Dead Sea Scrolls or the Qumran Literature.

While popularly known as scrolls, by far most of them fall very short of being full scrolls. It is true, almost complete scrolls have been found, but most of the material brought in by the Bedouin treasure hunters is small fragments. Many are so small that they contain only one or two letters. But even the one- or two-letter fragments are welcome additions to the gigantic jigsaw puzzle of our early religious history.

The Qumran Literature and related finds represent many different types and cover a span of fifteen centuries. Essentially, however, the true Qumran Literature represents a cross-section of the literature of the immediate pre-Christian period, which illuminates the origin and structure of the early Christian church mentioned in the Book of the Acts.

Much has been written already about this material. It has been said that if one were to read one book or publication a week, it would take more than fourteen years to read all that has appeared in writing on the Dead Sea Scrolls since their discovery. At least eight hun-

dred books and articles have appeared since that first discovery in 1947.

Of some 280 caves investigated, Cave 4 (4Q) found in 1952, has yielded most of the scrolls, more than 400 manuscripts quite complete, plus tens of thousands of fragments. Over one hundred Bible manuscripts have been found in this cave alone; every book of the Old Testament has been represented there except Esther. Think of the wealth of knowledge that has been added to that of our early Biblical documents by that cave alone!

Cave 1 (1Q), contains evidence that at one time 250 scrolls had been deposited there, although less than that actually have been found. Conjecture has it that many of the contents of 1Q were removed during the Middle Ages to form the doctrinal nucleus of the Karites.

The books that have been found may be classified as follows:

- (1) Books of the Bible and apocrypha, with which we are already familiar.
- (2) Commentaries on the books of the Bible.
- (3) The Copper Scrolls listing a fabulous fortune; not taken too seriously by present scholars.
- (4) Doctrinal books, psalms (songs or hymns), rules of discipline, etc., of the sect that owned the Dead Sea Scrolls (Qumran Covenanter).
- (5) Biblileike books that were current at the time, some of which we were previously familiar with, others not. These include Jubilees (Little Genesis or the Lamech scroll), the so called Zadokite work, and other apocalyptic books.

Rather than describe the contents of each cave separately, a compilation has been made in the form of a chart showing the most important finds up to the beginning of 1961.

It should be mentioned that in 1897, forty years earlier than the finding of the main body of the Scrolls, a copy of the Zadokite work was found in Old Cairo, hundreds of miles from the Dead Sea. Since 1947, a quite complete manuscript of it has been found in 1Q, seven in 4Q, and numerous fragments in 6Q. How this one copy arrived in Cairo and was found 40 years before the rest will probably remain a mystery.

Now what do they all mean? Why buy them? Why study them? Actually, they are very important to us historically, in verifying the Bible translations and in establishing doctrine.

Little need be said about the value of the scrolls in checking the translations of the Bible. It has already been mentioned that the Bible is a compilation,

CONTINUED ON PAGE 175

# Dead Sea Scrolls At A Glance

**Abbreviations:**

F, Fa = fragment, fragments  
 H = Thanksgiving scroll  
 LXX = Septuagint, the Greek version of the scriptures supposedly translated by seventy scholars.  
 Mi = Khirbet (Ruin) al-Mird, MSS of a much later date were recovered here, 5th-8th centuries. Actually, the MSS from Nu and Mi are an entirely different group from the original Dead Sea Scrolls of Qumran, being much later.

**Abbreviations continued:**

MSS = manuscript, manuscripts  
 Nu = Wadi Murabba'at, 12 miles from Qumran. These MSS date from 2d century and therefore are not properly classed with the earlier Dead Sea Scrolls.  
 IQ, etc. = Cave 1, etc., Qumran  
 S = Manual of Discipline  
 unk = unknown source

Writings	Number; where	Comments	Writings	Number; where	Comments
Genesis	Fa - 1Q Fa - unk source Fa - 5 diff. MSS 4Q	Mostly in Hebrew. " " Those from 4Q follow Massoretic text.	Commentary on Genesis 49	4Q	
Exodus	Fa - 2 MSS - 4Q Fa - 2 MSS - Nu Fa - 6 MSS - 4Q 1 excellent MS	In Hebrew.  Follows old Greek text. In Samaritan recension, established revision.	Commentary on Isaiah	Fa - 3Q 3 MSS - 4Q	See note above under heading of Isaiah.
Leviticus	Fa - 1Q 2Q Fa - 3 MSS - 4Q MSS - 4Q Fa - 6Q	In paleo-Hebrew, incorrectly called Phoenician script. Mixed texts. On papyrus, in Greek.	Commentary on Zephaniah	4Q	
Numbers	Fa - unk Fa - 2 MSS - 4Q	In Hebrew. In Hebrew. 4QNumB belongs to an extensive group of late (or Herodian) MSS, with texts between old Samaritan and Greek; they are decorated in red ink.	Commentary on Nahum	4Q	
	Fa - 2 MSS - 2Q		Commentary on Hosea	4Q	
Deuteronomy	Fa - 13 MSS - 4Q Fa - 3 MSS - 2Q Fa - Nu and others		Commentary on Habakkuk	1Q	
Joshua	Fa - Mi Fa - 2 MSS - 4Q	Represent the big change of the Septuagint (LXX) and are in Syro-Palestinianian.	Additions to Daniel	Fa	
Judges	Fa - 2 MSS - 4Q Fa - 1Q	All in Hebrew. " "	Additions to Esther	Fa	[Yet Esther itself was not found. Why? Ed.]
Samuel	3 MSS - 4Q	Of the LXX text. 4QSamA dates back about to 250 B.C.	Tobit	3 MSS - 4Q	2 in Aramaic; one on papyrus.
Kings	Fa - 1Q MS - 4Q	Papyrus.	Judith	Fa	
Isaiah	12 MSS - 4Q	More than 25 symbols were used by the Qumran group to indicate special passages in different documents. It had been thought previously that they did not understand the Messianic references in Isaiah, but these symbols show they had a highly developed Messianic concept. 60 of the verses are employed the same by both the Qumran group and the Christian church, indicating a possible connection.	Wisdom of Solomon	Fa - Mi	In Greek.
	10QIsa and 10QIsa fr 1Q Fa - 3Q		Ecclesiasticus	Fa	
Jeremiah	Fa - 2Q Fa - 3 MSS - 4Q	Hebrew. "	Baruch	Fa	
Ezekiel	Fa - 2 MSS - 4Q Fa - 1Q		Maccabees (I & II)	Fa	
The Twelve	7 MSS - 4Q	Hosea, Joel, Amos, Zephaniah, Malachi, Zechariah, and Jonah. None complete.	Jubilees	5 MSS - 4Q	One on papyrus. (The first MS found was misnamed the Laomech Apocalypse.)
	Fa - unk	Micah, Jonah, Nahum, Habakkuk, Zephaniah, Zechariah, in Greek.		2 MSS from 3Q 2 MSS - 1Q	
Psalms	10 MSS - 4Q Fa - 2Q, Nu, 1Q 1 MS - 11Q	A magnificent scroll, perhaps most complete and best preserved of all the scrolls.	Testament of Levi	Fa - 4Q Fa - 1Q	Aramaic.
Job	Fa - 4Q Fa - 2Q	In paleo-Hebrew. In Hebrew.	Sayings of Moses	Fa - 1Q	
Ecclesiastes	2 MSS - 4Q	In Hebrew.	Noach	Fa - 1Q 3 MSS - 4Q	All in Aramaic. Four of these follow the Greek and Ethiopic texts.
Ruth	2 MSS - 4Q 2 MSS - 2Q	In Hebrew.	Book of Noah	Fa - 1Q	References to this book are found in Testament of Levi and in Jubilees.
Canticles or Song of Solomon	Fa - 6Q 2 MSS - 4Q		Book of Mysteries	1 - 1Q 4 MSS - 4Q	
Lamentations	1 MS - 3Q 1 MS - 4Q		Testimonia	MSS - 4Q	Bible prophecies relating to the chief figures expected by the Qumran group in the last days.
Esther	none	[Why? Did they not recognise Esther as canonical? Was it even written at that time? Ed.]	Patriarchal Blessings	MSS - 4Q	
Daniel	Fa - 1Q	IQDan contains the portion of Daniel where the language changes from Hebrew to Aramaic (Dan. 2:4). 4QDanB contains the portion where the language changes from Aramaic back to Hebrew.	Wisdom	MSS - 4A	5 other Wisdom type MSS from 3Q.
Chronicles	Fa - ? (1Q ?)	A strip of leather, part of six lines, two columns, eaten badly by worms; only four complete words legible.	The New Covenant	MS - 1Q	
	1 MS - 4Q		The Coming Doom	1 MS	A sermon.
Midrash on Genesis	IQ		Manual of Discipline	3 MSS - 1Q	Also called Rule of the Community.
			Scroll of the War of the Sons of Light against the Sons of Darkness	4 MSS - 4Q	Describes in detail the actual or anticipated war between the followers of righteousness and those of Belial or the devil.
			Thanksgiving Scroll	F	Psalms and hymns of thanksgiving.
			Zadokite Document	7 MSS - 4Q Fa - 6Q 1	A fragment of the Zadokite work was found in old Cairo in 1897. Abbreviated CD.
			A lost Targum of Job	F	Seems to be the Targum condemned by Rabbi Gamaliel I (teacher of St. Paul) and is among the earliest Targums committed to writing.
			Book of Haiku	F	The Book of Proof (or the Test Book).
			The Copper Scroll	1Q	Record of treasure valued at \$200,000,000 in gold and \$5,000,000 in silver, plus more in priceless incenses, etc.
			Prayer of Nabonidus	4Q	From lost Daniel literature.
			Miscellaneous Laws Letters Liturgies Prayers Rituals Rituals Phylacteries Pliorilegium of Messianic promises Undetermined and unidentified fragments		

Have you ever wondered about the

## ORIGIN OF THE AMERICAN INDIAN

*Ever since Columbus reached this continent and mistakenly called the native inhabitants "Indians," thinking he was in the Indies, scholars have been trying to determine the true origin of the Red Man. Scores of books have been written about the more widely accepted theories the most important of which was that Man arrived from Asia via the Bering Land Bridge and then proceeded to populate both American continents.*

*Mormon people, on the other hand believe that at least part of the American aborigines arrived by water 4000 years ago and again 2600 years ago. Some feel that they then spread as far as New York State, while others believe that they spread only as far as Central Mexico.*

*Lord Kingsborough years ago postulated that the Indians were the Lost Tribes of Israel, and he spent a lifetime and a fortune trying to prove it. He left behind a large set of books which are valuable in spite of his theories because of the Codices which he also included.*

*Now comes an entirely new theory. While it is widely acclaimed by some who have read it, it will undoubtedly be received very coldly by others. Readers of this magazine will remember its author, Thomas E. Lee, as the contributor of two previous articles, one on the "Ross Earthworks" and the other on the "Battleground of the Long Sault." His biographical sketch will be found on page 115 of the June 1961 issue. So well taken is this present theory that other archeological publications have already requested permission to reprint it, even before our initial publication.*

*Attention is invited to the notice in the first column of the*

*masthead page of each issue indicating that this, like other theories published, is that of the writer and not necessarily that of the publisher or editor.*

*In order to give our newer readers a background of the older and widely accepted theory about the origin of the American Indian, an article on this subject written by the editor some time ago, is published first. This material was taken largely from personal verbatim notes in a class on "American Indians" given by Dr. Walter W. Taylor who says, "THE MATERIAL IS GREATLY OVERSIMPLIFIED FOR THE BENEFIT OF STUDENTS." Dr. Taylor, in a recent letter to the editor, also states that he has since modified his thinking somewhat. The material included, even though oversimplified and now modified to a degree, forms a good background to Mr. Lee's article.*

*Following the introductory article by the editor, is Mr. Lee's new material on the origin of the American Indian, after which appears an article on the "Bering Land Bridge" by Dr. David M. Hopkins, reprinted by permission, from SCIENCE.*

*Mr. Lee wishes to express his gratitude to Mr. Frank Ridley, Dr. Askell Love, and Dr. Vernon Leslie who have offered valuable suggestions in the preparation of his paper.*

*To round out the series and make it more valuable, "American Indians" has also been chosen as subject material for the STUDENT AIDS in this issue. Two AIDS are included, one giving the culture areas according to Dr. Taylor, the other giving linguistic classifications.*

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### One Theory:

## THE AMERICAN INDIANS

By Joseph E. Vincent

**WHO IS THE AMERICAN INDIAN?** How did he get into the Americas? How long has he been here? Are all Indians of the same racial origin? These are questions that have intrigued the White Man every since the famous voyage of Columbus.

Before dealing with these questions, let us first consider the name, "Indian." It was Columbus himself who was responsible for calling our aborigines by this name. He had been commissioned to find a route to India (or the Indies, as no distinction was made at that time). When he landed on the shore of one of the islands of what we now call the West Indies, he thought he had found a new way to India, and that he was actually on the soil of India. He therefore called the natives "Indians," while the islands were called the Indies.

Although we know that he was mis-

taken, the names remain and are now considered proper both for the indigenous inhabitants of the entire continents of America and for the islands. Thus we have two sets of Indians and two sets of Islands of the Indies. We must use adjectives to differentiate them — a very cumbersome way of naming people or islands. The Asiatic Indian and the American Indian bear the same name but are not related. The East Indies and the West Indies bear the same name, although a hemisphere lies between them.

The study of the American Indian, commonly called Indian, at least on this continent, is as interesting as his history is different and difficult to unravel. At one time, all Indians were thought to be of the same racial stock—Mongolian—but now we know that this was erroneous. They may be primarily of Mongoloid stock, but they are definitely not all from

the same Mongoloid groups.

The apparent absence of fossil remains of anthropoid apes or of possibly ancestral sub-human forms such as are being found in Africa is one of the main reasons for the belief that man did not develop on this continent. The earliest remains of Man thus far found fall within the late stages of development. This means that Man arrived here, by migration or by a series of migrations, from elsewhere.

Apparently the Indians, or at least most of them, came to this continent across the Bering Land Bridge which existed long ago. Some may have come by way of the Bering Sea itself, in boats. Occasional landings of early seafaring peoples may have occurred, but there is no definite proof at this time.

When studying the movement of such

CONTINUED ON PAGE 167

A New Hypothesis:

## THE QUESTION OF INDIAN ORIGINS

By Thomas E. Lee

GROUND IN THE MILLS and shaped in the moulds of our great universities, I set out in 1950 to do my bit in filling some of the small gaps in knowledge of the American Indian which, fortunately, still remained. The picture was quite clear and was capable of only one valid interpretation. All Indians came to America fairly recently across Bering Strait. Folsom Man came first—or, if not first, came hard upon the heels of Clovis and Sandia. Remarkably few of his characteristic fluted points (only Wormington 1957:42) have turned up in Alaska, and Siberia is not infested with them—but after all, fluting techniques could have been invented here.

Wave upon wave of immigrants followed (MacNeish 1957:3), each pushing the preceding wave before it. They fanned out, ultimately, to the farthest reaches of the Americas, and moved again northward into glaciated areas as the ice retreated.

For me, this beautiful picture crashed into irreparable ruin in 1951, with the discovery of the Sheguiandah site on Manitoulin Island, Ontario (Lee 1953), and the initial announcement of geologist Dr. John Sanford of Wayne University that the lower levels of artifacts there were embedded in glacial till and in primary position.

At this point, a wiser man would have filled the trenches and crept away in the night, saying nothing. Books had been written, lectures given, and pronouncements made. Glaciers destroy all before them. There could be no retreat. Indeed, a prominent anthropologist urged me to forget all about what was in the glacial deposits and to concentrate upon more recent materials overlying them.

To do the safe, conservative, scientific thing (Carter 1951:297), one should emphasize established facts and suppress the not generally accepted facts. I did not. Sheguiandah was a piece of grit in the academic eye, all the more irritating because the findings were supported by several prominent scientists. Sheguiandah had to be rubbed out, by whatever means. Experts were found to counteract the first authorities and, as Ridley (1960:47) stated, Sheguiandah was rubbed out.

At the moment, it seems safe to suggest that Man did not originate in America. The Indian, somehow, sometime, came from elsewhere.

In that case, when did the process of migration stop? Or is it still going on? Let us be careful. The more recent move-

ments seem to have been largely "wrong-way Corrigans" (Voegelin 1958:57). Again, since blood group B is anything but rare in Asia, while virtually absent here, we must halt immigration from Asia far enough back in time to allow for a hypothetical mutation, and one which could almost eliminate "B" all the way to Tierra del Fuego. (Haws, 1956:3, 4.) yet, assuming that culture as a whole was not transmitted by smoke signals or by Griffin's crows and floating logs, we apparently must do one of three things: (1) contemplate considerable population movement into the Americas within the ceramic period of our Northeast; (2) advocate diffusion of ideas and/or materials across vast distances in which no trace of them has been found; or (3) chew upon the unpalatable fare of independent invention to account for what Spaulding has called "startling parallels" between the cultures of northeastern North America and northwestern Europe.

Radiocarbon analysis, which is a magnificent tool when its results are used intelligently, has not clarified matters thus far. Some plain and fancy footwork has been displayed, with Quimby's (1954) hauling mile-high glaciers across Ontario as recently as 4,000 years ago. At the same time others derived the 5,000-year-old Laurentian culture of our Northeast from its hypothetical ancestral home in Ontario. Again, the "party line" has shifted quite recently. Now post-glacial Lake Algonquin assumes a modest middle-aged respectability at about 10,000 years, instead of the loudly proclaimed 3,600 years which had crashed head-on into Sheguiandah.

The literature suggests to me that the most difficult words in the anthropological vocabulary are, "I do not know." It is thus all the more refreshing to find Wormington (1957:259) telling us that a bare beginning has been made in the whole field of the study of Early Man in North America. Likewise Spaulding's (1953:51) statement that detailed scientific archeology in the Aleutians is in its infancy is refreshing, as it is to read the acknowledgment of Collins (1953:32) that little more was known then about the relatively recent Dorset culture than when Jenness first described it in 1925. With equal candor, Rainey (1953:45-6) has condemned the pleasant game of matching "significant" artifact types from such a region as central Alaska and the Yukon, with the attendant and equally pleasant game of leapfrogging continents and mil-

lennia, when only pocket-size collections are available.

Developments in radiocarbon methods now permit a cautious contemplation of European parallels in remote times. Should we now be looking for Neanderthal? "Not necessarily," says Compton (1960:104-7). Observed similarities could be explained either by postulating that some small group of Neanderthals found their way to the New World, or by the development of an unspecialized enclave here.

If man did not originate here, when did he first enter the Americas? Carter, among others, has long argued for interglacial man (1951:307). His evidence, unfortunately, was susceptible to academic attack by its very nature. Geological interpretations are not necessarily certain, and it was very easy for the learned to reject his specimens. "Most archeologists" (Wormington 1957:223) remained unconvinced.

The opening of trenches into and through glacial deposits at Sheguiandah, examined during four years of excavations by about 100 geologists and something less than a half-dozen archeologists, threatened for a time to show that Carter was correct. This time, the artifacts could not be disputed. Competent geologists saw them emerging from undisturbed glacial till and from meltwater deposits. They saw them at still greater depth and beneath masses of rather large boulders. A minimum date of 30,000 years was assigned to the artifacts within the till by Dr. Ernst Antevs, Dr. John Sanford, and Dr. Jaan Terasmae (Lee 1957:125 and Sanford 1957:14b). Sanford, Terasmae, and other geologists seriously raised the possibility of interglacial beginnings for this site.

Confronted with these statements, an archeologist in Arizona said, "Well, why not? If Early Man came from the north, as we believe, then there must be older sites up there than we have here." But it was not to be that simple. The culmination of determined opposition is seen in a statement by Quimby (1960), who not only totally ignores the published opinions of the authorities who spent years on the site, as well as the meaning of the entire stratigraphy and typology, but even finds a United States Geological Survey radiocarbon date (Lee 1956) "a little too old" and fixes the age of the entire site at 8,000 years!

The popular view is that Man first came into the Americas from Siberia to

Alaska by way of the Bering Strait. Wormington (1957:1) states that Bering was the *only* way in which he could have come, prior to the development of suitable watercraft for oceanic travel. Collins (1951:113) tells us that we are *forced*, on theoretical grounds, to bring both Indians and Eskimos in by this route. It is of interest, therefore, to find Sykes (1960:159) reporting a widely held view in Europe that the Bering Strait idea is "unrealistic."

Spaulding (1946) has dealt extensively with a postulated "boreal" culture, although Griffin (1955:31) seems a little doubtful of its existence. This would explain away some of the difficulties encountered in the simple Bering Strait concept. Among other things, it would place people in the critical areas where they would have to be, if diffusion is argued.

Other routes or sources have been proposed. Wormington (1957:249) has briefly outlined them.

In line with popular authority, the well known concept of submerged land masses is passed in haste. Again we find that, while the ghost of Atlantis has been slain in America, some European scholars, such as Ohdner and Malaise (1960), are anything but committed to an acceptance of its demise. With "new evidence" (Malaise 1961), based upon studies of ocean floor sediments and the presence of freshwater diatom algae, they bring the Mid-Atlantic Ridge above water in surprisingly recent times.

The question of trans-Pacific contacts has long been fought with some heat. Wormington mentions its disfavor for anything other than very recent contacts. There is something fascinating, almost hypnotic, about the idea of Bering as the sole means of entry. Yet the experienced Rainey has said (1953:46), "To refuse Neolithic Man the ability to cross the southern Pacific and to accept his ability to cross or penetrate northeastern Siberia and northwestern America, under present climatic conditions, is straining at a gnat and swallowing a camel."

The Aleutians are almost as tempting as Bering, when consulting a map, globe, or crystal ball. Evidence thus far, however, shows them being invaded from Alaska, not Siberia. Our Asiatics didn't like it here?

Trans-Atlantic migrations, Wormington tells us, are generally thought to be most remote. Indeed, few publications even raise the point. It does seem possible that rejection, however firm, is a little premature. Indeed, Sykes (1958:25) has told us that a dry land route certainly existed there 23,000 years ago.

Ridley of Toronto has recently (1960) dared to publish a paper raising this very question. In dealing with the impressive parallels between our Northeast, an area with which he is quite familiar, and north-

western Europe, he draws heavily upon his personal observations of materials in the museums of China and Moscow. Although far from being the first to call attention to these, he does present new evidence, particularly that pertaining to the Glen Meyer developments (Late Woodland Culture) in Ontario (Ridley 1958). His hypothesis, clearly labeled as such, is a bid for fair consideration of the information.

Spaulding (1946:166) and Gjessing (1948) have noted the trans-Atlantic similarities in stone work. Spaulding finds that the "extremely detailed parallels" are misleading. He notes, however, an implication of long continued contacts or multiple migrations. Similarly, Ritchie (1945:27) refers to an invasion which seems to have brought the basic Laurentian complex from the Old World.

Griffin (1946:45) tells us that he has long been impressed with the realization that practically every element found in our Woodland pottery is also present in the Old World. Furthermore he says that there is no need to look to the Eskimo for the origin of eastern North American pottery. Ritchie (1949 and 1955:70, 79) has tended to derive his Woodland cultures from Asia, introducing them from Ontario and, with the aid of MacNeish (Ritchie 1951:134), ultimately from farther west.

The extension of trans-Atlantic parallels into the intricacies of Glen Meyer is even more startling. Ridley was familiar with this material from his Boys site (1958), and was well qualified to judge resemblances. Again, I saw scores of his slides of ceramics from northern Russia. Insofar as I could determine from these excellent photographs, I could accept almost every sherd as belonging to Glen Meyer and earlier Woodlands developments.

Whatever the true explanation may be, and apart from whatever differences there may be, it is quite clear that authorities have been deeply impressed by the parallels.

Assuming for the moment that diffusion, migration, or some combination of these is the explanation for the remarkable cultural developments in the Northeast, what route was used? A glance at a map is enough to set us pointing at Bering. (See map.) We know from Jeness (1929:78) that migrations across the Strait were both feasible and probable. One can see one coast from a mountain on the other. But this is only the beginning of the problem. While I speak from the comfort of my office, we find the experienced Rainey (1953:46) stating that northwestern America and northeastern Siberia together form one of the most formidable barriers to human communication found anywhere in the world.

Being aware of this, authorities have poured our immigrants through an ice-

### Student Aids

This issue contains a twin set in the series of STUDENT AIDS. Each month these AIDS are published near the center of the book, back to back, so that the entire page (or pages) may be removed and placed in a regular three-holed notebook.

The material used for the culture area chart in this issue is from Dr. Walter W. Taylor, professor of Anthropology at Southern Illinois University, Carbondale, Illinois. It was taken from the editor's personal notes while he was a graduate student at Mexico City College. It varies somewhat from that of other well known authorities. The cultural and linguistic charts were both published in this issue for easy comparison.

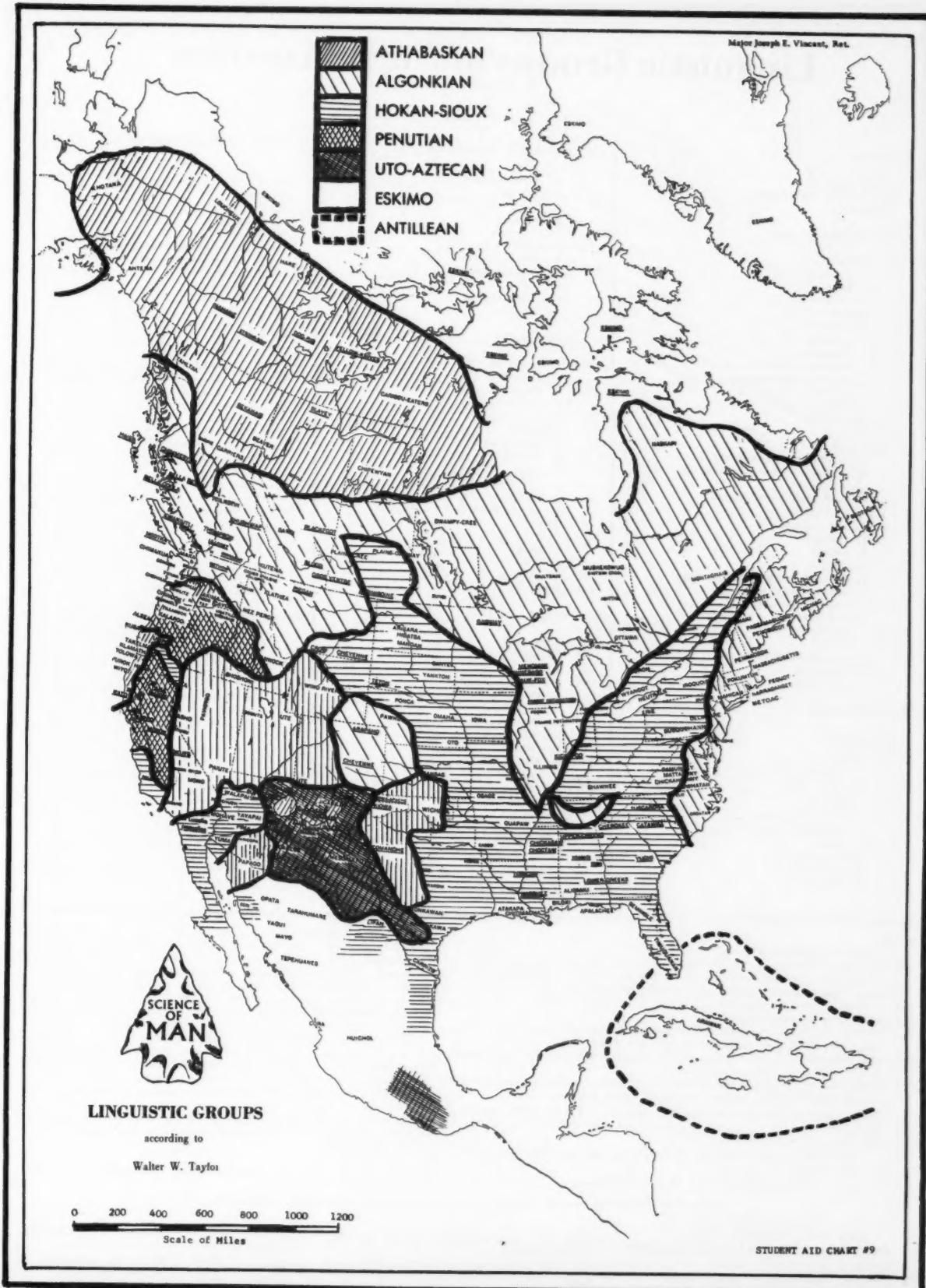
free Mackenzie-Yukon corridor to the Plains. This being the case, one might expect to turn up materials in some quantities along a narrow path traveled by waves of people over perhaps forty thousand years, with a certain piling up of evidence in such bottlenecks as the Diomedes.

Siberia offers little support. No Solotrean sites are reported east of the Dneister (Wormington 1957:253), to account for the single-shoulder Sandia and the laurel leaf points of America. Chard (1956:406) and Wormington had no report of any indubitably preceramic sites anywhere in the 1,600 mile stretch from the Lena to Bering. Rainey wrote (1953:45) of the strange dissimilarity in archeological materials on the two sides of Bering. Only the microblade traditions, apparently, show any very promising connections, aside from an early Chinese motif present in Alaska.

Similarly, Alaska has produced very little early material. Rainey (1953:43) found the sites and collections "ridiculously small and scattered." MacNeish (1956a:657) stated that Cape Denbigh was the earliest culture thus far found in Alaska, and that it had been variously dated from 12,000 to only 3,509 years.

The Mackenzie Valley problem was approached with exuberance, and by 1953 MacNeish (p. 12) had acquired some suggestive hints concerning migrations and diffusion of culture from Asia. These had only to be transformed, he said, into "solid archeological facts" by excavations. Early Man points were found at Great Bear Lake (MacNeish 1956b:75), but curiously, we find MacNeish who, in company with his colleagues, formerly had Early Man migrating southward up the Mackenzie, now dragging him northward down the Mackenzie toward Asia

CONTINUED ON PAGE 165



# Linguistic Groups of North America

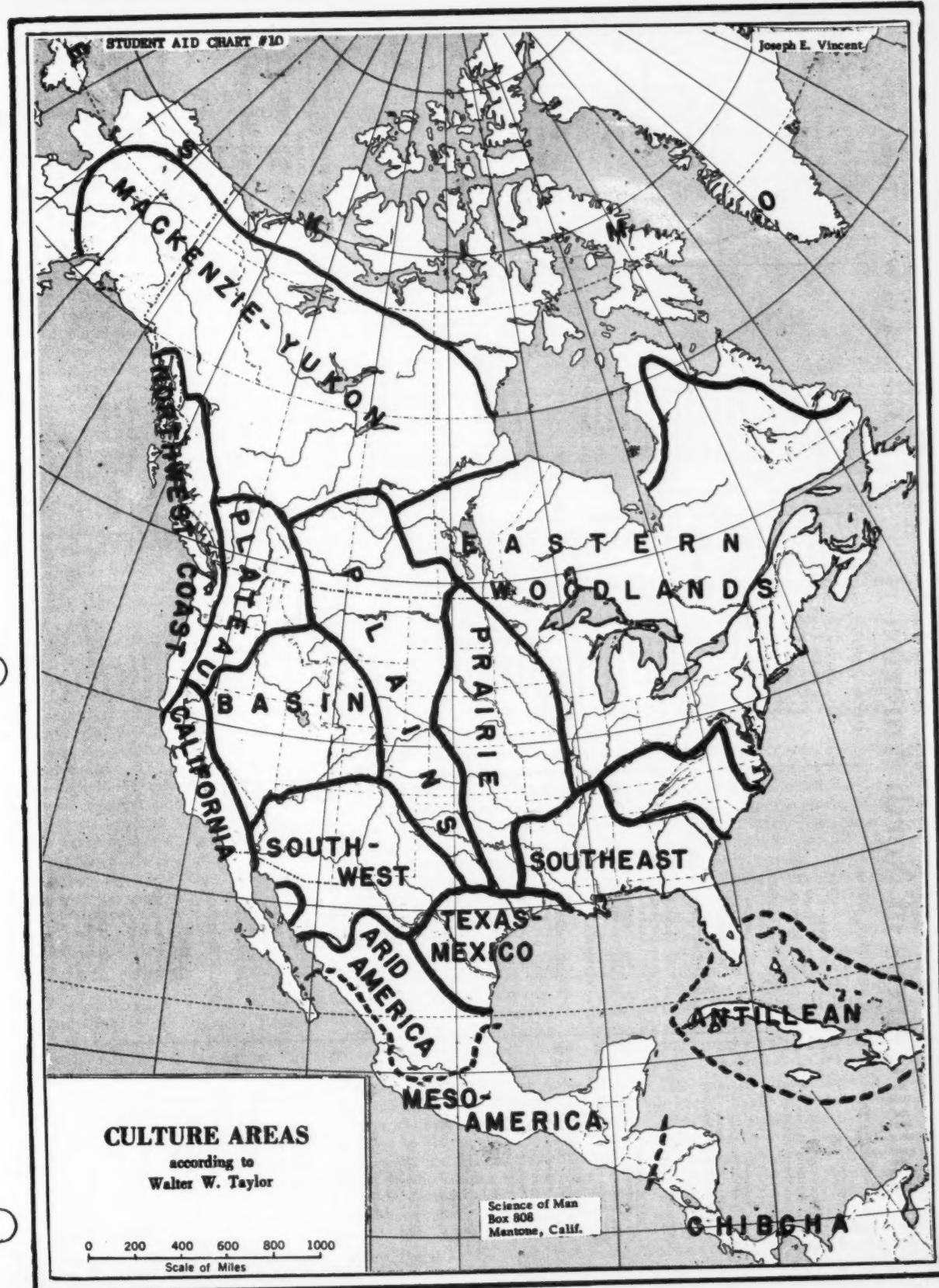
I. ESKIMO	(E)	III. ATHABASKAN, Continued	VI. HOKAN SIOUAN, Continued		
1. Alaskan 2. Central-Greenlandic 3. Aleut		j. Upper Umpqua k. Telowa l. Hupa m. Wailaki n. Sinkyone o. Western Apache p. Navajo (8) q. Eastern Apache r. Lipan s. Kiowa Apache t. Matoile	29. Yuki 30. Pomo 31. Salinan 32. Chumash 33. Yuman a. Walapai-Havasupai-Yavapai b. Yuma-Nojave-Maricopa (8) c. Cocopa (9) d. Diegueño 34. Kiliwa (10) 35. Cochimi 36. Waicuri (?) 37. Keresan a. Acoma-Laguna b. Villages of Zia, Santa Ana, San Felipe, Santo Domingo, and Cochiti		
II. ALGONKIAN (1) (2)	(AI)	IV. AZTEC-TANOAN	(AT)		
4. Wakashan a. Nootka b. Kwakiutl 5. Kootenay (3) 6. Salish a. Lillooet b. Shuswap c. Thompson d. Okanagan-Sanpoil-Lake e. Flathead-Kalispel- Pend d'Oreille f. Bella Coola 7. Yuco-Wiyot 8. Beothuk 9. Algonkian (1) a. Cree-Montagnais-Naskapi b. Ojibwa-Otawa-Algonkin (2) c. Menomini d. Sauk and Fox-Kickapoo e. Potawatomi f. Illinois-Miami g. Shawnee h. Micmac i. Abnaki j. Mahican-Pennacook (11) (13) k. Massachusetts l. Pequot-Mantauk (11) m. Delaware n. Nanticoke o. Powhatan p. Arapaho-Gros-Ventre q. Cheyenne r. Blackfoot		13. Uto-Aztec (5) a. Luiseno b. Cahuilla c. Gabrieleno d. Pima-Papago e. Opata f. Tarahumara g. Cahita h. Hopi i. Ute-Southern Paiute j. Shoshone-Gosiute=Comanche k. Bannock-Northern Paiute 14. Tanoan a. Tiwa b. Tewa c. Towa 15. Kiowa 16. Zuñi (6)	38. Caddoan a. Caddo b. Wichita c. Arika-Pawnee 39. Karankawa 40. Tonkawa 41. Coahuilteco 42. Atakapa 43. Chitimacha 44. Tunica 45. Natchez 46. Muskogean a. Creek b. Hitchiti c. Alabama-Koasati d. Choctaw-Chickasaw 47. Iroquoian a. Huron-Wyandot b. Erie c. Onondago-Cayuga-Seneca d. Oneida e. Mohawk f. Conestoga-Susquehanna g. Cherokee h. Tuscarora 48. Siouan a. Winnebago b. Ioway-Missouri c. Omaha-Fonse-Kansa-Osage- Quapaw d. Dakota-Assiniboin e. Mandan f. Hidatsa-Crow g. Eastern Siouan h. Yuchi i. Yamasee j. Timucua		
III. ATHABASKAN (4)	(Ath)	V. PENUTIAN	(P)		
10. Tlingit 11. Haida 12. Athabaskan (4) a. Chipewyan-Yellowknife-Slave b. Dogrib-Hare (12) c. Kutchin d. Tanana-Koyukon (13) e. Tanaina-Ingalik (15) f. Kaska g. Sekani-Sarsi h. Chilcotin i. Nicola		17. Tsimsian 18. Chinook 19. Coos 20. Sahaptin a. Walla Walla-Umatilla- Yakima b. Nez Perce 21. Klamath-Modoc 22. Wintun a. Wintu b. Patwin 23. Maidu 24. Yokuts 25. Costanoan	17. Tsimsian 18. Chinook 19. Coos 20. Sahaptin a. Walla Walla-Umatilla- Yakima b. Nez Perce 21. Klamath-Modoc 22. Wintun a. Wintu b. Patwin 23. Maidu 24. Yokuts 25. Costanoan	(HS)	
		VI. HOKAN SIOUAN (7)	(HS)		
		26. Karok 27. Shasta 28. Washo	26. Karok 27. Shasta 28. Washo		

NOTES:

- (1) Sometimes spelled Algonquian.
  - (2) Note that Algonkian (or Algonquian) refers to the language whereas Algonkin (or Algonquin) refers to the tribe or to the individual member. See Diamond Jenness in the Natural History Bulletin #65, 1934.
  - (3) Sometimes spelled Cuteney and in various other ways.
  - (4) Sometimes written Athapaskan.
  - (5) Uto-Aztec also includes several Mexican Indian languages. See SoM, Vol. 1, No. 4, p. 128 (Student Aid Chart #8).
  - (6) Zuñi is generally spelled with the Spanish ñ though it is pronounced with the regular "n" sound (not h).
  - (7) Hukan-Siouan is sometimes called Sioux-Hukan. This group also includes some Mexican Indian languages. See SoM, op. cit.
  - (8) For correct spelling of Mojave see SoM, Vol. 1, No. 3, p. 98.
  - (9) Cocopa is sometimes written Cupacpa. See SoM, Vol. 1, No. 4, p. 128.
  - (10) The Kiliwa are in Mexico.
  - (11) For more data on the Mahican (Mohegan) groups see SoM, Vol. 1, No. 3, p. 100, and No. 4, p. 132.
  - (12) Do not confuse Chipewyan with Chippewa (Ojibway).
- (13) The similarity of Indian tribal names is often confusing to readers. In the days before the coming of a written language, the various elements of a split group may have pronounced their tribal names slightly differently, causing the white men who had a written language to spell them differently. Also, the many different nationalities of white men, all speaking differently, recorded even the same name differently. These two factors, among others, caused our present variation in the spelling of many Indian names. Difference in spelling is used now by anthropologists to differentiate between groups. Thus we have Mahegan, Mahican, and Cooper's Mohican; Tanana and Tanains; Mayo and Maya. We have the Popoloca of Puebla, who speak an Otomangue tongue, while the Popoluca of Veracruz speak a Mayan language. Note also Chipewyan and Chippewa. Similarly, notice that there is an Aleut language and cultural group whereas the islands are the Aleutians.
- (14) For correct spelling of "Navajo," see SoM, Vol. 1, No. 3, p. 98.

LIST OF STUDENT AIDS

1. Archeological Chart of Middle America
2. (Limited distribution only)
3. Zapotec Hieroglyphs: Day Signs
4. Relative Sizes of the Old and New World Pyramids
5. Principal Archeological Sites of the United States
6. Cultural Age - Geological Time Correlation
7. South American Tribes
8. Indian Groups of Mexico and Central America
9. Linguistic Groups of North America
10. Culture Areas of North America



Culture Areas of North America

According to W. W. Taylor

CULTURE AREA and Sub-Area		II. SOUTHWEST, Cont'd.		V. EASTERN WOODLANDS, Cont'd.		VII. PRAIRIE		XII. ESKIMO, Cont'd.	
1. BASIN CULTURE	Lane.	25. Tarhunara	AT	65. Mahican (not Mohegan) A1	A. Southern	147. Greenland			
1. Western Shoshone	AT	26. Cahita	AT	66. Pequot (Incl. Mohegan) A1	B. Central	148. Labrador	P		
2. Northern Paiute	AT	a. Yaqui	AT	67. Massachusetts	C. Northern	149. Cabirio	P		
3. Southern Paiute	AT	b. Mayo (15)	AT	68. Montauk	D. Iroquois	150. Aleut (13)	HS		
4. Gosiute	AT	G. Lower Colorado		69. Delaware	E. Plains	XII. PLATEAU			
5. Washo	HS	27. Yuma	HS	70. Seneca	F. Eastern Marinal	109. Tonawanda	HS	151. Nez Perce	
6. Bannock	AT	28. Cocopa	HS	71. Susquehanna	G. Jicarilla Apache	110. Ponca	HS	152. Yamima	
7. Lemhi Shoshone	AT	29. Mojave (8)	HS	72. Nanticoke	H. Mescalero Apache	111. Kansas	HS	153. Umatilla	
8. Northern Shoshone	AT	30. Maricopa	HS	73. Ojibway (or Chippewa) A1	I. Plains	112. Omaha	HS	154. Walla Walla	
9. Wind River Shoshone	AT	III. NORTHEAST MEXICO AND TEXAS		74. Ottawa	J. Sub-Arctic	113. Mississippi	HS	155. Wanapum	
10. Ute	AT	31. Karankawa	HS	75. Algonkin	K. Pecos	114. Pawnee	HS	156. Modoc	
I.I. SOUTHWEST		32. Tonkawa	HS	76. Menomoni	L. Sioux	115. Mandan	HS	157. Southern Okanagan	
A. Upland Yuman		33. Atakapa	HS	77. Sauk and Fox	M. Coahuilteco	116. Hidatsa	HS	158. Flathead	
11. Walapai		34. Coahuilteco	HS	78. Kickapoo	N. Tsimshian	117. Arikara	HS	159. Pend d'Oreille	
12. Havasupai		35. Teasupiloco	HS	79. Potowatomi	O. Plains	118. Santee Dakota	HS	160. Kalispel	
13. Havasupai (3 groups)		IV. CALIFORNIA		80. Wimbenago	P. Northwest Coast	119. Yankton Dakota	HS	161. Lake	
B. Upland Athabaskans	Ath	A. Peninsular	HS	81. Illinois	Q. Plains	120. Comanche	HS	162. Kootenay	
14. Western Apache	Ath	36. Diegueño	HS	82. Miami	R. Plains	121. Kiowa	HS	163. Thompson	
a. White Mountain		37. Cochimí	HS	83. Shawnee	S. Plains	122. Kiowa Apache	HS	164. Lillooet	
b. San Carlos		38. Wacuri	?	84. Huron	T. Plains	123. Lipan Apache	HS	165. Shuswap	
c. Mimbres		39. Wacuri	HS	85. Wyandot	U. Plains	124. Cheyenne	HS	166. Chilcotin	
d. Chiricahua		40. Seri	HS	86. League of the Iroquois or "Five Nations"	V. Woodlands-Southeast	125. Arapaho	HS	167. Nicola	
15. Navajo (14)	Ath	B. Southern	AT	87. Seneca	VI. Transition Culture Area	126. Gros Ventre	HS	168. Nootska	
C. Western Pueblo		41. Luiseno	AT	b. Mohawk	C. Northern	127. Blackfoot	HS	169. Kwakiutl	
16. Hopi	AT	42. Cahuilla	AT	c. Oneida	D. Central	128. Teton Dakota	HS	170. Bella Coola	
17. Zuñi (6)	(?) AT	43. Gabrieleño	AT	d. Onondaga	E. Plains	129. Crow	HS	171. Tilqit	
D. Eastern Pueblo		44. Chuash	HS	e. Cayuga	F. Plains	130. Sarci	HS	172. Tsimsian	
18. Keresan	HS	C. Central	45. Yokut	f. Tuscarora, later)	G. Northwest Coast	●		173. Haid	
a. Zia*		46. Valley Maidu	P	g. Puebloan	H. Plains			174. Chinook	
b. Santa Ana*		47. Costano	P	h. Southern Algonkins	I. Coast Salish			175. Upper Umpqua	
c. San Felipe*		48. Wintu	P	i. Southern Iroquois	J. Coast Salish			176. Coos	
d. Cochiti*		49. Patwin	HS	j. Southern Siouans	K. Chinook			177. Coos	
19. Tanooan	AT	50. Salinan	HS	90. Southern Siouans	L. Chinook			178. Yurok	
a. Tiva		51. Yuki	HS	91. Cherokee	M. Plains			179. Wiyot	
(1) Taos*		52. Pomo	HS		N. Mackenzie-Yukon			180. Hupa	
(2) Picuris*		53. Shasta	HS		O. Mackenzie-Yukon			181. Tolowa	
(3) Isleta*		54. Mattole	Ath		P. Northwest Coast			182. Karok	
b. Tewa		55. Sinkyone	Ath		Q. Plains			183. Slave	
(1) Santa Clara*		56. Mailaki	Ath		R. Creek			184. Yellowknife	
(2) San Juan*					S. Dogrib			185. Wiyot	
(3) S. Juane*					T. Athabaskan			186. Chinook	
(4) Tesuque*					U. Athabaskan			187. Athabaskan	
c. Town					V. Woodlands			188. Athabaskan	
A. Sub-Arctic					W. Northeastern			189. Athabaskan	
57. Nascapi	A1				X. Southwest			190. Athabaskan	
58. Montagnais	A1				Y. Athabaskan			191. Athabaskan	
59. Cree	A1				Z. Athabaskan			192. Athabaskan	
60. Beothunk	A1				A. Athabaskan			193. Athabaskan	
B. Northwestern					B. Athabaskan			194. Athabaskan	
61. Aniakki	A1				C. Athabaskan			195. Athabaskan	
	A1				D. Athabaskan			196. Athabaskan	
	A1				E. Athabaskan			197. Athabaskan	
F. Gila-Sonoran					F. Athabaskan			198. Athabaskan	
22. Pima	AT				G. Athabaskan			199. Athabaskan	
23. Papago	AT				H. Athabaskan			200. Athabaskan	
24. Opata (extinct)	AT				I. Athabaskan			201. Athabaskan	
G. Athabaskan					J. Athabaskan			202. Athabaskan	
H. Athabaskan					K. Athabaskan			203. Athabaskan	
I. Athabaskan					L. Athabaskan			204. Athabaskan	
J. Athabaskan					M. Athabaskan			205. Athabaskan	
K. Athabaskan					N. Athabaskan			206. Athabaskan	
L. Athabaskan					O. Athabaskan			207. Athabaskan	
M. Athabaskan					P. Athabaskan			208. Athabaskan	
N. Athabaskan					Q. Athabaskan			209. Athabaskan	
O. Athabaskan					R. Athabaskan			210. Athabaskan	
P. Athabaskan					S. Athabaskan			211. Athabaskan	
Q. Athabaskan					T. Athabaskan			212. Athabaskan	
R. Athabaskan					S. Athabaskan			213. Athabaskan	
S. Athabaskan					T. Athabaskan			214. Athabaskan	
T. Athabaskan					U. Athabaskan			215. Athabaskan	
U. Athabaskan					V. Athabaskan			216. Athabaskan	
V. Athabaskan					W. Athabaskan			217. Athabaskan	
W. Athabaskan					X. Athabaskan			218. Athabaskan	
X. Athabaskan					Y. Athabaskan			219. Athabaskan	
Y. Athabaskan					Z. Athabaskan			220. Athabaskan	
Z. Athabaskan					A. Athabaskan			221. Athabaskan	
A. Athabaskan					B. Athabaskan			222. Athabaskan	
B. Athabaskan					C. Athabaskan			223. Athabaskan	
C. Athabaskan					D. Athabaskan			224. Athabaskan	
D. Athabaskan					E. Athabaskan			225. Athabaskan	
E. Athabaskan					F. Athabaskan			226. Athabaskan	
F. Athabaskan					G. Athabaskan			227. Athabaskan	
G. Athabaskan					H. Athabaskan			228. Athabaskan	
H. Athabaskan					I. Athabaskan			229. Athabaskan	
I. Athabaskan					J. Athabaskan			230. Athabaskan	
J. Athabaskan					K. Athabaskan			231. Athabaskan	
K. Athabaskan					L. Athabaskan			232. Athabaskan	
L. Athabaskan					M. Athabaskan			233. Athabaskan	
M. Athabaskan					N. Athabaskan			234. Athabaskan	
N. Athabaskan					O. Athabaskan			235. Athabaskan	
O. Athabaskan					P. Athabaskan			236. Athabaskan	
P. Athabaskan					Q. Athabaskan			237. Athabaskan	
Q. Athabaskan					R. Athabaskan			238. Athabaskan	
R. Athabaskan					S. Athabaskan			239. Athabaskan	
S. Athabaskan					T. Athabaskan			240. Athabaskan	
T. Athabaskan					U. Athabaskan			241. Athabaskan	
U. Athabaskan					V. Athabaskan			242. Athabaskan	
V. Athabaskan					W. Athabaskan			243. Athabaskan	
W. Athabaskan					X. Athabaskan			244. Athabaskan	
X. Athabaskan					Y. Athabaskan			245. Athabaskan	
Y. Athabaskan					Z. Athabaskan			246. Athabaskan	
Z. Athabaskan					A. Athabaskan			247. Athabaskan	
A. Athabaskan					B. Athabaskan			248. Athabaskan	
B. Athabaskan					C. Athabaskan			249. Athabaskan	
C. Athabaskan					D. Athabaskan			250. Athabaskan	
D. Athabaskan					E. Athabaskan			251. Athabaskan	
E. Athabaskan					F. Athabaskan			252. Athabaskan	
F. Athabaskan					G. Athabaskan			253. Athabaskan	
G. Athabaskan					H. Athabaskan			254. Athabaskan	
H. Athabaskan					I. Athabaskan			255. Athabaskan	
I. Athabaskan					J. Athabaskan			256. Athabaskan	
J. Athabaskan					K. Athabaskan			257. Athabaskan	
K. Athabaskan					L. Athabaskan			258. Athabaskan	
L. Athabaskan					M. Athabaskan			259. Athabaskan	
M. Athabaskan					N. Athabaskan			260. Athabaskan	
N. Athabaskan					O. Athabaskan			261. Athabaskan	
O. Athabaskan					P. Athabaskan			262. Athabaskan	
P. Athabaskan					Q. Athabaskan			263. Athabaskan	
Q. Athabaskan					R. Athabaskan			264. Athabaskan	
R. Athabaskan					S. Athabaskan			265. Athabaskan	
S. Athabaskan					T. Athabaskan			266. Athabaskan	
T. Athabaskan					U. Athabaskan			267. Athabaskan	
U. Athabaskan					V. Athabaskan			268. Athabaskan	
V. Athabaskan					W. Athabaskan			269. Athabaskan	
W. Athabaskan					X. Athabaskan			270. Athabaskan	
X. Athabaskan					Y. Athabaskan			271. Athabaskan	
Y. Athabaskan					Z. Athabaskan			272. Athabaskan	
Z. Athabaskan					A. Athabaskan			273. Athabaskan	
A. Athabaskan					B. Athabaskan			274. Athabaskan	
B. Athabaskan					C. Athabaskan			275. Athabaskan	
C. Athabaskan					D. Athabaskan			276. Athabaskan	
D. Athabaskan					E. Athabaskan			277. Athabaskan	
E. Athabaskan					F. Athabaskan			278. Athabaskan	
F. Athabaskan					G. Athabaskan			279. Athabaskan	
G. Athabaskan					H. Athabaskan			280. Athabaskan	
H. Athabaskan					I. Athabaskan			281. Athabaskan	
I. Athabaskan					J. Athabaskan			282. Athabaskan	
J. Athabaskan					K. Athabaskan			283. Athabaskan	
K. Athabaskan					L. Athabaskan			284. Athabaskan	
L. Athabaskan					M. Athabaskan			285. Athabaskan	
M. Athabaskan					N. Athabaskan			286. Athabaskan	
N. Athabaskan					O. Athabaskan			287. Athabaskan	
O. Athabaskan					P. Athabaskan			288. Athabaskan	
P. Athabaskan					Q. Athabaskan			289. Athabaskan	
Q. Athabaskan					R. Athabaskan			290. Athabaskan	
R. Athabaskan					S. Athabaskan			291. Athabaskan	
S. Athabaskan					T. Athabaskan			292. Athabaskan	
T. Athabaskan					U. Athabaskan			293. Athabaskan	
U. Athabaskan					V. Athabaskan			294. Athabaskan	
V. Athabaskan					W. Athabaskan			295. Athabaskan	
W. Athabaskan					X. Athabaskan			296. Athabaskan	
X. Athabaskan					Y. Athabaskan			297. Athabaskan	
Y. Athabaskan					Z. Athabaskan			298. Athabaskan	
Z. Athabaskan					A. Athabaskan			299. Athabaskan	
A. Athabaskan					B. Athabaskan			300. Athabaskan	
B. Athabaskan					C. Athabaskan			301. Athabaskan	
C. Athabaskan					D. Athabaskan			302. Athabaskan	
D. Athabaskan					E. Athabaskan			303. Athabaskan	
E. Athabaskan					F. Athabaskan			304. Athabaskan	
F. Athabaskan					G. Athabaskan			305. Athabaskan	
G. Athabaskan					H. Athabaskan			306. Athabaskan	
H. Athabaskan					I. Athabaskan			307. Athabaskan	
I. Athabaskan					J. Athabaskan			308. Athabaskan	
J. Athabaskan					K. Athabaskan			309. Athabaskan	
K. Athabaskan					L. Athabaskan			310. Athabaskan	
L. Athabaskan					M. Athabaskan			311. Athabaskan	
M. Athabaskan					N. Athabaskan			312. Athabaskan	
N. Athabaskan					O. Athabaskan			313. Athabaskan	
O. Athabaskan					P. Athabaskan			314. Athabaskan	
P. Athabaskan					Q. Athabaskan			315. Athabaskan	
Q. Athabaskan					R. Athabaskan			316. Athabaskan	
R. Athabaskan					S. Athabaskan			317. Athabaskan	
S. Athabaskan					T. Athabaskan			318. Athabaskan	
T. Athabaskan					U. Athabaskan			319. Athabaskan	
U. Athabaskan					V. Athabaskan			320. Athabaskan	
V. Athabaskan					W. Athabaskan			321. Athabaskan	
W. Athabaskan			</td						

## Lee — American Indians

CONTINUED FROM PAGE 160  
(1956:74 and 1960:48).

Although MacNeish (1957:2) tells us that "a staggering number of cultures moved through the Northwestern interior," remarkably little pottery has been found, it seems, along this route. Actually only one vessel and a few "wares," each based upon two sherds, have been found in the Mackenzie delta! No resemblance to our northeast ceramics is seen.

Following the now painfully barren trail down to Manitoba, we find, strangely, that MacNeish (1956c:44) is deriving both the Woodland pottery, and the first burial mounds from the east, out of Ontario. Similarly, Quimby (1960:93) brings the bearers of Michigan's Owasco westward from Ontario. Was everyone heading for home?

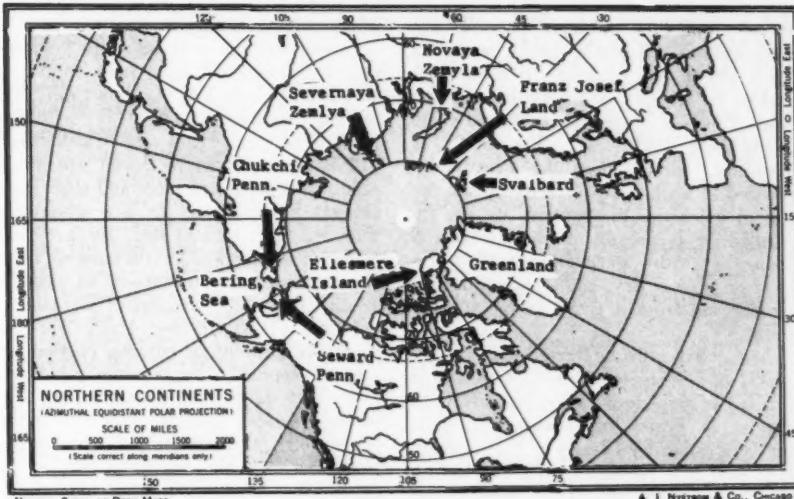
Rainey (1953:43) concluded that there was then no evidence whatever for the hypothetical migrations of men from Asia via the Bering Strait region during Neolithic time. Why?

Griffin (1953:42), intrigued by the unknown territory between Manitoba and Alaska, thought that Norton Sound ceramics should stimulate additional efforts to locate ceramic sites in that gap. MacNeish, whose work is endorsed and lavishly praised by Griffin (1959), was evidently stimulated (see Alcock 1951 to 1956). Between 1949 and 1954, he surveyed much of the Mackenzie River and delta, long stretches of the Arctic coast, the Liard and South Nahanni Rivers, territories east of Great Slave Lake and northeast of Lake Athabasca, and about Great Bear Lake. The results are meager. His reports (1951 and 1953) show that the artifact yield from 40 out of 60 sites is limited, in each case, to two flint flakes, or to a fragment or two of an ovoid blade, or even to no artifacts at all.

He reports 231 sites in Manitoba where, in part of one season, he performed "four major and three minor excavations" as well as a site survey, collecting "10,000 archaeological specimens," largely made up of buffalo bones.

His 1957 survey of "62,000 square miles" of southwestern Yukon Territory and part of the Alcan Highway yielded only 1,182 artifacts from 96 "stations," from which he was able to construct "six civilizations" (1957:3), an addition to his nine civilizations established at Firth River on equally slim grounds.

With admirable candor, Rainey (1953:43) referred to the "astonishing lack of any evidence for human occupation in the north during just that period when, we have assumed, ancestors of the American Indian were infiltrating into North America." The several reports of MacNeish show little real change in this situation. It should be possible, then, to reappraise the Bering-Mackenzie theory and evidence without engendering too



much heat.

We are told that (a) the sites are there, but for some reason we have not been able to find them; (b) the sites were in river bottoms and were either destroyed or buried (over 8,000 miles of route?); or, (c) failing that, we have the suggestion of Collins (1951:113) that passage might have been so rapid as to leave no trace. In marked contrast, Ritchie (1946:102) felt that Laurentian ought to be traceable all the way to Siberia. I, too, am most reluctant to believe that all trace would vanish over the entire 7,000 miles or so from Baikal to eastern Ontario.

Ridley (1960:47), concerned primarily with the remarkable parallels across the Atlantic, compared the 8,000 miles via Bering Strait with 1,400 miles of sea and 1,600 miles of coast via the North Atlantic. By increasing the distance, however, the water barrier, which is so formidable as to repel, shrinks and perhaps becomes nonexistent, under certain conditions, the probability of which increases if we contemplate crossings as much as 40,000 years ago.

An interesting chain of islands lies along the 80th parallel of north latitude. The greatest gap is between the Spitsbergen group and Greenland, approximately 270 miles. The islands lie in or on the fringe of polar ice, quite apart from the question of pack ice. They might be approachable, at times, from Cape Chelyuskin east of the Yenesei, from Novaya Zemlya, or even from Norway at times in the past, with Bear Island midway in this 360 mile stretch of sea. What glacial conditions, lowering sea levels, crustal movements and subsidence, and climatic changes may have done to this situation is open to argument.

Even if it could be shown that watercraft was required, crossing could have been made whenever rafts or skin boats were devised or known in this northern

area. Irish monks discovered the Faeroes as early as the 7th century (Langer 1952:365) and were in Iceland when the Vikings arrived. Unconfirmed reports are that evidence of Man in Iceland extends back to about A.D. 200, and that some of it relates to the Eskimo.

Ritchie (1956) tells us that the Archaic fishermen of his area must have employed dugout boats. Childe (1946:75) states that Mesolithic Europeans could cross the stormy seas between Ulster and Kintyre, while their Neolithic successors could make still more adventurous journeys. He adds that even paleolithic hunters must have possessed some sort of rafts and canoes.

Historic and archeological records show that, by whatever means, the passage from Greenland to Labrador was not insurmountable. The remainder of the route is another matter. Note, however, that Sykes (1958:25) regards a dry land route here as fairly certain, while Ohdner and Malaise (1960:150) refer to a ridge from Greenland over Iceland to Europe which sank, they believe, late in the last glacial period, bringing about changes in conditions similar to those prevailing in the North Atlantic in postglacial times. They vigorously challenge the Ewing-Donn (1956) theory of an Arctic Ocean ice-free and relatively warm during periods of continental glaciation. One point of agreement: climatic fluctuations have occurred.

In modern times, there is a great difference in climate between Greenland, which is the colder, and the eastern side of the Atlantic at the same latitude. Iceland is mild, for its northern position, and one reads of January thaws and warm winter rains (Gilson 1928:241) far to the north in Spitsbergen.

How could Man have known about the island chain? Without consulting the wingless insects or the Great Auk, we may observe that some of the islands are very large (Spitsbergen is some 27,000 square

miles) and that most, if not all, are mountainous. Volcanic peaks, some of them active, rise to 5,000 or more feet. Hekla, in Iceland, has been in eruption some 22 times in the past thousand years (Hutchison 1928:474). The range of visibility, surely, must be greatly increased at such times. Even without the aid of volcanoes in eruption, we are informed, it is possible to see Greenland from the northwestern mountains of Iceland on a clear day, while both countries can be seen from a small vessel at mid-point.

Arctic drift must be recognized. Langer (1952:564-5) records the northwestward drifting of ships in pack ice, from Novaya Zemlya to Franz Josef Land, and from the New Siberian Islands to Spitsbergen. It is said that Russians have traveled on an ice floe from the Arctic coast to the northern tip of Greenland.

A number of expeditions, vainly trying to reach the North Pole from Spitsbergen, have found themselves on an icy treadmill which moved too rapidly southward.

If crossing on polar ice ever did occur, it would seem that they would have been with the drift, rather than against it.

The question of food arises. Whatever the circumstances may be now, it is evident that, on the islands at least, animal life was once amazingly abundant. The *Americana* (1906) describes the reindeer, white bears, ermines, Arctic foxes, walruses, swarming seals, teeming fish, and vast flights of waterfowl "so numerous as to darken the air and literally hide the rocks." Some appreciation of this may be gained from the figures for 1906 given by Gilson (1928:234), when 31 sloops stuffed their holds with the oil from 136 white whales and the pelts of 296 polar bears, 135 walruses, 6,000 seals, 2,888 reindeer, 141 foxes, and 1,000 pounds of eiderdown, at Spitsbergen. Food, then, might have been a major attraction, not an obstacle.

If the route was feasible—and again, speaking from my office, I should think that it was—what evidence is there that it was ever used? Over the Greenland-to-Europe portion, aside from Iceland, I think we have to say, "None."

It is said that not enough work has been done on the Bering route. How much less has been done here! We have heard that there are site-hunting difficulties there. Still others arise here. Polar ice will be a very poor place on which to look. Ice, snow, and even lava flows cover much of the island chain. Glaciers play their part, too, for Gini (1960) tells us that even now Norse farms are emerging from under the retreating ice.

Material has turned up in Greenland, of course, with much of it attributable to recent Eskimo cultures. Collins (1953:35) reports rubbed slate implements in large numbers in the northeast, regarding them as 17th Century or later imitations of

#### European iron tools.

Dorset remains or those of the "closely related Stone Age" have been found in all parts of Greenland (Collins 1953:35). Sarqaq remains, thought by Collins (1953:39), but not by Meldgaard (1952), to be related to Dorset, are stratigraphically separated from and older than Dorset. Since Dorset is now popularly extended back to 500 B.C., the presence of these cultures will have a bearing upon any proposed late movement of peoples or diffusion of culture out of Eurasia.

Richie (1946:104 and 1951:130) derived his Laurentian culture, carried by a brachycephalic people, from the Maritimes and the St. Lawrence Valley. Apparently related material does extend far to the north, through Quebec, Newfoundland, and into the northeast section of Labrador. It seems to thin out or is absent as one approaches James Bay to the west. Its temporal position within the "Boreal Archaic" is not certain (Byers 1959:252).

As Spaulding has brought out (1946: 166), the facile identification of the two cultures, northern Europe and our Northeast, is perhaps not justified. There are differences, many of them; they are significant, and they must be explained. Be it noted, however, that they have not kept the profession at large from hauling the cultures of our Northeast across some 8,000 difficult and trackless miles via Bering Strait. It will be academically popular to emphasize the differences to disprove one route, while emphasizing the similarities to prove the other.

If migration is rejected, for either route, and the case for diffusion is advanced, we must somehow get people into suitable positions in order to serve as transmitting agents.

If we argue that there is no evidence for sustained trans-Atlantic contacts, let us also apply this test to the 8,000 mile route.

And if, in the end, we come out for independent invention, combining it however we will with migration and diffusion within the Americas, rather than across the top of the world—a development out of Compton's unspecialized and very early race, with occasional specialized additions—let us then present an explanation that will at least bear examination: for the botanical evidence; for the racial factors such as blood group B; and for the almost unbelievable parallels across the Atlantic, through a great range of pre-ceramic and ceramic developments, which grow stronger as the Atlantic is approached from the Urals on the one side and from the Plains on the other.

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## Vincent — American Indians CONTINUED FROM PAGE 158

a group as the American Indian, it is necessary to do so from three different aspects: language, culture, and physical features. These will be discussed in that order.

There are six different language groupings of Indians in America north of Mexico, which apparently indicate many different migrations to this continent. (See Student Aid No. 9, pp. 161-2.)

(a) The *Eskimo*, the language of the group on the northern fringe of Canada and Alaska, as well as on Greenland.

(b) The *Athabascan* of central Alaska and northwest Canada, and of New Mexico and surrounding areas.

(c) The *Algonkian*, extending from the west coast just south of the Athabaskan to as far east as Labrador, and as far south as the southern tip of Missouri,

with an isolated group in eastern Colorado.

(d) The *Hokan-Siouan* (or *Hokan-Siouan* or *Sioux-Hokan*), in the central plains, the middle western states, and the southern states.

(e) The *Uto-Aztec* (or *Aztec-Tanoan*) of Utah, Nevada, Arizona, and extending down into Mexico.

(f) The *Penutian* of western Oregon, California, and small isolated areas elsewhere.

Considering the cultural traits of the Indians, Dr. W. W. Taylor divides them into twelve groups. (See Student Aid Chart No. 10, pp. 163-4.)\* These may represent different migrations from Asia. Intermixing and constant change in culture, however, make it difficult to determine with any degree of accuracy how the culture groups and migrations were correlated.

Physical types of Indians vary. Some are tall, some short. Some are long-headed and others short-headed. So it is with other features, such as nose form, epicanthic fold (the fold of skin at the inner corner of an Oriental eye), lip form, stature, body build, etc.

Archeological studies along the Aleutian Islands indicate that man did not migrate here via the islands themselves, but instead moved westward out of Alaska to occupy the chain. In the opinion of Dr. Taylor,\* the early Indians followed three routes coming from Asia into the United States, all passing over the Bering Land Bridge. Due to late glaciation in eastern Canada, only western routes were used by the immigrants. The first is along the Arctic coast of Alaska and then southward. The second is up the Yukon and Mackenzie Rivers. The third is along the south coast of Alaska. All three lead into the western part of the United States. Of these, the middle route was the most used. The northernmost was cold and icy, requiring special equipment for passage. The southern route involved the crossing of many waterways, again requiring particular equipment. The route through the two river valleys was the warmest and most comfortable. In order to discuss the routes taken, it is necessary first to consider the cultural groupings.

Early Man in North America may be divided primarily into two main cultures one of which may be further divided into two subcultures. The divisions are:

(a) Plains culture  
(1) Llano complex or elephant hunters

(2) Bison hunters

(b) Desert, basin, or cordillera culture  
The *Llano complex* is the name commonly given to that group of people from the plains who lived by hunting the elephant. These people used bone implements which were different from those of other cultures. They also used large stone points. Their scrapers varied from coarse

to fine. They had hammerstones and knives. It was they who made the Clovis fluted points (see *GEMS & MINERALS*, Sept. 1960, p. 36). A typical Clovis fluted point is shown in figure 4 (*ibid.*). At the Blackwater Draw site in Texas, Clovis fluted points are found beneath those of the Folsom culture, which seems to be intrusive, that is, out of place. Elsewhere, the reverse is true. Clovis points are found all the way from Virginia and the Province of New Brunswick to the west coast. Cultural centers may have been in the southeast, as well as in the panhandle of Texas and New Mexico. Two well known locations are the Naco Mammoth and the Lehner sites. At the latter, the most recently discovered, thirteen fluted points of the Clovis type were found, along with the remains of the elephant, the horse, the tapir, and a bison jaw.

The bison hunters used different tools for their work. Their points, called *Folsom*, were shorter, lighter, better made than the Clovis, with rounded bases (see Fig. 5 *ibid.*). In common with the elephant hunters, they had hammerstones and knives. In addition, they had gravers and bone discs. The first site at which these artifacts were officially recognized was at Folsom in northeastern New Mexico, hence the name. Other sites were found later all around Texas and in adjacent states. Points with a Folsom shape, though not fluted, have been found as far south as Durango. This may indicate that the culture there did not reach the same degree of proficiency, at least in the making of fluted points, as it did in the heart of the plains area, at Blackwater Draw near Lubbock, Texas. A carbon 14 test gave a date of 9883 (plus or minus 350) at Blackwater Draw. Older dates are now appearing. (SoM, Feb. 1961, p. 58, April, p. 84, and June, p. 123.)

While the last few paragraphs were a divergence from the original subject, it was necessary to show how one group developed before continuing the discussion of the routes taken and the migrations of the early inhabitants of this continent.

The Mackenzie-Yukon route was the first to open up at the close of the last great ice age, and the first newcomers entered the continent along it. Not too long afterward, the desert people entered. They moved along the east side of the Rockies and, according to Dr. Taylor, they spread eastward. From the *Archaic Culture* of these people developed the *Early Desert* (also called *Early Basin* or *Early Cordillera Culture*). They lived from eastern Washington to Arizona, and on down into Mexico, with the culture near Danger Cave, Nevada, which is not far from the Great Salt Lake. From them developed the modern *Basin Culture* and the western cultures. It is possible that the Aztec Tanoan language group came

from those people.

Later, through this same channel, another cultural group entered. These people spoke Hokan-Sioux. They were the *Plains People* mentioned above. Those who followed elephant hunting became the *Llano Culture* and left the Clovis points as the common symbol of their culture. Their cousins, the bison hunters, left us the Folsom points. These Sioux-Hokan people drove a wedge, coming from the Northwest as far south as the Gulf of Mexico. At this point they turned northeast again, going as far as the St. Lawrence. From these two groupings came our present-day *Basin Culture*, the *Southwest Culture*, the *California Cultures*, and the *Texas-Mexico Marginal Group* (see p. 163).

As the great ice barrier continued to recede, a passage finally opened up south of Hudson Bay. As the population of Asia was still expanding, more wanderers were forced to leave, and a new group speaking an Algonkian tongue entered our continent. As the west coast and mountain area were now inhabited, it was bypassed as the new group pressed southward through the newly opened Hudson Bay area. It must be remembered that the Early Basin culture and the Sioux-Hokan had spread all the way to the east coast of the United States by this time. Perhaps the eastern portion did not offer as much resistance as the western branches, and they were soon overcome. From this grouping we get many of our eastern tribes so familiar to all of us: the *Cree*, the *Ottawa*, the *Delaware*, the *Shawnee*, and, farther west, the *Cheyenne* and the *Blackfoot*.

Following the Algonkins came the *Athabascans* (sometimes spelled Athapaskan) from Asia. Finding most of the land taken and apparently well protected, they settled between the next-to-the-last arrivals, the Algonkins, and their homeland, Asia. You will find them today just where they first settled, in northwestern Canada and central Alaska. There is one Athapaskan group today for which it is difficult to account, the Navajo-Apache group, which is in the Southwest, completely surrounded by the Uto-Aztecans and Algonkins. It may be that this group was more warlike and was able to fight its way through or to slip through the Algonkins and the Uto-Aztecans to the position it now occupies. It could also be an example of language borrowing, which will be discussed later.

Another group for which it is difficult to account is the *Penutian* language speakers of eastern Oregon and northern and central California. There is no archeological or linguistic evidence to show how this group arrived in its present location in the New World.

Probably the last group to arrive and the last major group to be considered is the *Eskimos*. So different are these

people from the Indian groups previously mentioned that they are usually not even referred to as Indians — just Eskimos. They may be divided roughly into two or three cultural groups. Apparently they were iceland and tundra dwellers before arriving here, as Eskimos will be found in the Arctic regions of northeast Asia. They continued to live in a familiar environment, on the cold fringes of the continent, just as they had been doing.

There are several other questions about some of the smaller groups besides the Penutians. These are the West Indies inhabitants, some lower Central American peoples, and the Indians of South America. These will not be considered in this short paper.

One of the greatest problems in connection with the Indians is how the cultures, the physical groupings, and the language groupings became so mixed up. You will note on the maps (pages 161 and 163) that the culture groups and the linguistic groups differ widely. The physical characteristics also vary (physical types often are incorrectly called "racial" characteristics). In all groups there are some long-heads, some round-heads, some short in stature, and some tall.

Apparently at a time in the history of each group, presumably when crossing into the New World or slightly before, each group was internally homogenous. They spoke the same language, had the same customs, and had the same physical characteristics.

In this new land, the groups were split up by mountains, rivers, or just by distance alone. Often a wedge was forced by another people with entirely different customs and language. Wars and battles took place. Women and children were often carried off and the children raised in another culture with another language. Often language-borrowing and culture-borrowing took place.

A group of Algonkins, for example, might have been conquered by a group of Hokan-Sioux. Living together, even though one was in a subjugated position, had an effect on both. It is known from European history that the conqueror often assumes the characteristics of the conquered—language and culture. In this case the Algonkins may have had techniques superior to the Hokan-Sioux, which the latter readily adopted, while the Algonkins, being subjugated, may have been more or less forced to adopt the language of their conquerors. It may have been, in this hypothetical example, that the double group later split, the Algonkins now speaking Hokan-Sioux, and the Hokan-Sioux having Algonkin culture traits. Situations exactly like this did happen, in some instances. That is why it is so difficult to trace the early history of the groups. At the same time, this accounts for the many isolated groups. This also is the reason why the

culture groups, the physical groups, and the linguistic groups no longer are the same. It is only by means of a study of the three groupings together, and through the cooperation of archeologists, ethnologists, and physical anthropologists that we have been able to trace as much of the history and wanderings of the Indians as we have.

### The Bering Land Bridge

Many facts of paleontology and biogeography indicate that the Old and New Worlds have sometimes been connected by a continuous land route that extended from Alaska across the present shallow floors of the Bering and Chukchi Seas to Siberia. Geologic studies in western Alaska permit a more detailed consideration of the times at which the land bridge existed during the last 50 million years of Tertiary and Quaternary time. Some well founded inferences can be drawn concerning the climate and vegetation that prevailed on the land bridge during the last (Wisconsin) glacial interval, the most recent period during which the land bridge existed.

The floor of the northeastern Bering Sea, Bering Strait, and Chukchi Sea is a wide platform extending from the Alaskan to the Siberian coast. It is covered by 100 to 500 feet of water. The platform is separated from the much deeper floor of the western Bering Sea by a submarine escarpment more than 5,000 feet high. A less abrupt escarpment descends from the northern edge of the Chukchi platform to the depths of the Arctic Ocean.

The Bering-Chukchi platform is monotonously flat. St. Lawrence Island, St. Matthew Island, the Pribilof and Diomedes Islands, and several small islands near the coast of Seward Peninsula are the only prominent topographic highs in the Bering Sea and Bering Strait. Herald Shoal, 42 feet deep, lies in the central Chukchi Sea. Aside from these, the surface of the platform is devoid of sharply defined topographic features. Bottom gradients are so small that they are difficult to measure. No features are recognized that can be interpreted as submerged valleys or submerged strand lines.

The nearly featureless-topography of the surface evidently results from intense marine sedimentation during the last few thousand years. Though the Bering-Chukchi platform happens to be a marine basin at present, the crustal structure below the veneer of young marine sediments resembles the structure of continental areas rather than the structure of typical ocean basins. Most of the present islands in the Bering Sea and Bering Strait are composed of typical continental rocks, similar to those in parts of Siberia and Alaska.

Striking evidence of the structural continuity of the western Alaska and eastern

Siberia land masses is provided by a comparison of the bedrock stratigraphy and structure of Wrangell Island on the continental shelf north of Siberia with those of Lisburne Peninsula in northwestern Alaska.

The geological evidence indicates quite clearly that Siberia and Alaska represent segments of a single continental mass, separated by a segment only temporarily submerged, the Bering-Chukchi platform. Paleontological evidence indicates, however, that the land connection has been interrupted by temporary submergence in this area several times during the last 50 or 60 million years.

We may conclude that the area of the Bering and Chukchi Seas lay above sea level throughout most of the last 50 or 60 million years. At some remote time near the beginning of the Pleistocene Epoch, approximately a million years ago, the Bering-Chukchi platform was depressed, the Bering and Chukchi coasts of Alaska assumed approximately their present forms, and the water barrier between the continents came into existence. A reduction in sea level of 300 feet to the level recorded during early Wisconsin



time more than 35,000 years ago would result in the exposure of nearly all of the Bering-Chukchi platform. Then Alaska and Siberia would be joined by an almost featureless plain extending nearly 1000 miles from the north shore of a shrunken Bering Sea to the south shore of the Arctic Ocean.

Recent paleobotanical studies in west-

ern Alaska establish clearly that the land bridge supported only treeless tundra during its most recent period of existence in late Wisconsin time. Most parts of the Bering land bridge have always been free of glacial ice.

#### REFERENCE

David M. Hopkins, "Cenozoic History of the Bering Land Bridge," *Science*, Vol. 129, No. 3362, June 5, 1959, pp. 1519-1527, and bibliography. Reprinted by permission.

## How to Repair Broken Ceramics

All archeologists know how disappointing it is to discover what appears to be a complete and beautiful artifact only to complete the excavation and find the piece broken. Perhaps many of you have tried to repair such ceramics with Duco cement or model airplane cement and found the results discouraging.

Museums have used this type of cement very satisfactorily for years, but it is difficult to use and the results not always satisfactory. This cement is actually a celluloid cement, celluloid dissolved in acetone, in amyl acetate, or other similar solvent. The difficulties in using celluloid cement are three: (1) It dries rapidly and it is difficult to shift a sherd if it is put on slightly crooked; (2) it sometimes leaves a ridge where two pieces are stuck together; and (3) it does not soak into the ceramic or hold tightly enough, often peeling off releasing the two pieces it was supposed to bond.

Another type of cement has been on the market for a few years, which will be found to be much more satisfactory once the technique of using it has been learned. The writer has used it for about six years and has found it much more satisfactory. Ceramics repaired with this new cement usually will break elsewhere than at the point of bond.

This cement is called casein glue and is a byproduct of milk. It is sold under various trade names throughout this country and Mexico and can be identified as a white glue usually in a plastic bottle rather than in a tube. For repair work it is best to buy it in quart glass bottles and use this to refill the small plastic bottles. The technique of using it is simple, once learned.

In the case of an old vessel previously bonded with celluloid cement, remove all the old cement by peeling or scraping. If any is allowed to remain, the new bond will not hold. A solvent may also be used to remove the old cement, although in doing so one must be sure that the solvent itself evaporates or is removed before

proceeding. If working with painted ceramics, do not allow the solvent to contact the paint. In the case of sherds recently dug up, it is also necessary to clean them thoroughly. Dirt adhering to the edges to be bonded will prevent a tight seam.

In the case of newly broken vessels, cleaning of course is not necessary. Beginners should cement only two pieces or three at the most at one time, until they have learned the technique. Old hands can often glue whole jars together almost at one time without waiting for the cement to dry between applications.

The first thing to do in repairing a badly broken ceramic is to lay out all the pieces and try to match them up on a flat surface. Don't try to fit an entire spherical bowl together while you are matching pieces. Instead, match the pieces and lay them out on a flat table like the skin of an orange that has been cut into segments, or a globe that has been slit



Fig. 1. A broken vessel with the pieces laid out flat but in their proper relative positions. In this particular case the vessel had previously been fastened together with celluloid cement, and since the large piece at the left was still together quite solidly, it was not taken apart.



Fig. 2. Applying the cement to the edges that are to be used at once.



Fig. 3. After allowing to dry a while, the two pieces are pressed firmly together.

along the meridians. Fig. 1. Of course your edges will be jagged and irregular and not straight like the segments of a nicely cut orange skin or the meridians of the earth. Laying them on a flat surface, however, is the best way to match the corresponding sides of the fragments and yet keep them flat.

Next select any two adjacent pieces and apply the cement to the two edges that match. Fig. 2. Do not apply it to the other edges yet. Allow those two pieces to dry a few minutes until the glue becomes rather tacky. Experimentation will tell you the proper time which will depend on the particular make of the cement, the absorptive qualities of the sherds, and the weather.

When you think the cement is right, put the two pieces together and press them sufficiently so that all excess glue is squeezed out. (Fig. 2.) You can hold them together if you wish or tape them. If tape is used lay them on some surface that will assist the tape in keeping the pieces united. To tape pieces together, use *masking tape*. If the pieces are curved, place the tape on the outside or convex side and lay the pieces over a curved object (knife handle for example) so that the weight of the pieces will pull down over the curved surface and against the pull of the tape. (See Fig. 4.) Two pieces bonded may also be laid concave side up, if taped on that side or stood on the edge if there is no pressure (Fig. 5).

Next, take two other pieces that will adjoin the first two and glue them to-

Fig. 4. The two pieces cemented and taped, and laid over a rounded object so that the weight of the pieces pulls against the tape.



Fig. 5. Another position in which the pieces could be placed to dry.



Fig. 6. When all the pieces have been put together in groups of two's, the groups are put together by two's in the same manner.

gether in the same manner, and continue on around the artifact.

When the glue on two adjacent groups of two pieces has been allowed to dry about 20 minutes, glue them together using the same procedure, so that you will then have four pieces cemented together. (Fig. 6.) During the process of drying and placing larger groups together, you may find that the pieces do not fit exactly due, possibly, to the fact that you did not put them together just right. As the glue has been allowed to dry only about 20 minutes you likely can make minor shifts with just a little pressure. If the glue is too hard, a single drop of water or two may soften it enough to make a slight shift. If it separates accidentally, add a drop of new glue to the old and rejoin the pieces at once.

In such matters you will have to discover your own techniques. These may depend not only on your own skill but also on the factors mentioned above.

Many times after putting an object together beginning at one side and working toward the other, you will find that the last adjoining parts do not join perfectly. Although there may be many causes other than these two, the most important are: (1) Small errors of your own in putting the fragments together may be cumulative and cause a wide gap or overlap at the end; (2) internal tensions within the artifact were released at the time of breakage and changed its shape.

If the error seems to be yours due to inaccuracies (Fig. 7) in putting the

Fig. 7. This illustrates a vessel that has been put together inaccurately. A small error has been made in each one of the five joints. The error is cumulative, and the sixth and last joint does not fit together.

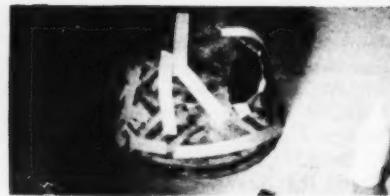


Fig. 8. The whole vessel glued together, taped, and left to dry. Note that one piece is still lacking. What to do with the hole left will be discussed in a later issue. The one piece on the table at first appeared to be a part of this vessel, and was thought to be the missing sherd. When the vessel was put together this far, a more careful examination revealed that the outside painting was slightly different, the thickness of the ware was different, and the shape itself would not fit the hole.

pieces together, wet all the joints just a little, but not enough to allow them to come apart. After letting them soften a few minutes try gently to force the vessel into shape and hold it there by running strips of masking tape all around it in circles. (Fig. 8.)

Sometimes this can be done in two steps, if you are afraid that wetting the glue will allow it all to fall apart. Place long strips of masking tape around the jar before wetting. These should hold it together even though the cement softens too much. With a second piece of tape over the first, it is usually possible to pull it tighter.

Internal tension causing a gap at the end are harder to describe. Little can be done to rectify this difficulty. When ceramics are fired in primitive kilns, they are often laid one upon another. The pressure of the upper ones causes stresses to develop in the lower ones. If the objects do not break during firing, the stresses still remain in them, hidden. When the piece is broken and is mended later, the shape is no longer round. (Fig. 9.) The same thing occurs also when artifacts are buried under the ground and

CONTINUED ON PAGE 175

Fig. 9. In this case all joints have been very carefully fitted together, all excess glue squeezed out, and still the vessel does not fit properly at this last joint. The error is not that of the repairman, but is due to internal strains that were released at the time of breakage. These strains will prevent the vessel from ever going together again without a crack at the last joint.



# The New Jersey Pine Barrens

## History and Folklore

By George A. Agogino

THE GREAT PINE AREA of New Jersey runs from Toms River south to Cape May and embraces the eastern two-thirds of the State in that section. It is an area of 2000 square miles having approximately 1,000,000 acres of pine forest growth. Its story over a period of two centuries is a lesson in conservation, its people an example of degeneracy. Its future is one of doubtful speculation. During the 18th century this section was alive with the activity of a rich industrial area. Today it is a silent wasteland, forgotten and forsaken by all except a few inhabitants, either too stupid or too stubborn to leave the blighted region. [The author describes this area as a wasteland from a cultural point of view. We are informed that it is a haven for botanists who find many plants in that area that are not found in any other nearby area. Ed.]

Three industries worked together to build up the industrial empire in the pine barrens prior to 1850. All three of these industries were dependent on the primary trade of lumbering for their existence.

The first of these three industries was shipbuilding. The demand for vessels began with our young country's need of a navy in the Revolutionary War and the War of 1812. This was augmented by a commercial demand for ships to build up the nation's international trade. With this incentive shipyards sprang up all over South Jersey where good harbors and an adequate supply of lumber made the enterprise promising.

The center of shipbuilding appeared to be the Mullica River. Along this River, shipyards sprang up at Leeds Point, Lower Bank, Green Bank as well as several other minor spots.<sup>1</sup> Barnegat City had a boom in industry,<sup>2</sup> as did Fort Republic where great square-rigged ships were constructed.<sup>3</sup> Great ships from two hundred to one thousand tons were built along Dennis Creek.<sup>4</sup> Clipper ship yards were built at Toms River, Waretown, Tuckertown, Absecon, Somers Point, Greenwich, Salem and Port Elizabeth.<sup>5</sup> Little realizing the tragedy that results from uncontrolled exploitation of natural resources, the lumbermen and shipbuilders alike were building themselves a rich empire.

The secret of shipbuilding was to have an almost limitless supply of lumber, largely yellow pine and cedar. The forests

of South Jersey during the period of the ship industry were an unbroken expanse of thousands of stately towering pine trees and thick rich cedar.<sup>6</sup> Oak was also present in plentiful quantities,<sup>7</sup> and a multitude of woodsmen were finding a ready outlet for their commodity in the lucrative shipbuilding industry. With little thought other than their own personal gain, they stripped the area close to the shipyards and then began to penetrate more and more into the pine wilderness seeking additional lumber.

By the early 1770's, sawmills began to mushroom all over the "pines." At this time sawmills were constructed at Bridletown, Hanover Furnace, Harlshorne, and little Pine Mill.<sup>8</sup> A short time later sawmills appeared at Harrisia, Colliers Mill, and Slaptown.<sup>9</sup> The great amount of available lumber allowed these sawmills to sell the lumber at a very cheap rate. The sawmill at Little Pine Mill cut planks for as low as \$12.00 a thousand feet and still made a profit according to their records.<sup>10</sup>

The second of the three major industries was glass. Until 1739, the people living in what is today the United States were completely dependent on England for their glass. Not one glasshouse had been founded in the colonies.

However, early in the 17th century a German-born Philadelphia, brass-button worker looked at the seemingly endless supply of rich timber and fine grained white sand and decided it was time to invest in a new enterprise.<sup>11</sup> Caspar Wistar knew nothing of glass himself, but he considered this of minor importance. He sought out Captain John Marshal and contracted with him to go to Rotterdam and pick up four expert glassmakers who would like to come to the New World. In return for their skill, Mr. Wistar was to pay their passage, advance them money for support, and give them one-third the profits of the glass enterprise.<sup>12</sup> The glass experts were instructed to teach glass-making to Caspar Wistar and his son Richard, but to no one else.<sup>13</sup> In 1739 the building that housed the first successful glass works in America was erected near Allowaystown in Salem County.<sup>14</sup>

After Caspar Wistar died, his son went back to making brass buttons, leaving the glass experts to break away from the old contract and to establish glasshouses all over the pine barrens.<sup>15</sup> Glasshouses sprang up at Glassboro, Millville,<sup>16</sup> Iona

Lake,<sup>17</sup> Hermann City, Bulltown, and Malaga.<sup>18</sup>

Bog iron is the third and last of the three great industries founded in the pine barrens prior to 1850. It is by far the most important. If one were asked to describe the economic history of southern New Jersey in one sentence it would be as follows: Bog iron made southern New Jersey, and the lack of timber destroyed this area. Shipbuilding, lumber, and glass were important industries in the "pines," but all of them seemed minor beside the great bog iron enterprises that, for a while, brought great wealth to the pine forests.

Bog iron workers needed two essentials before they could set up a furnace. The first was a good water supply to furnish power for the forges and the second was to own a vast supply of the ever necessary forest trees to be converted into charcoal for fuel. Old-time bog iron workers have told me that it took at least 20,000 acres of timberland for a constant supply of wood for charcoal. This was usually divided into strips of 1000 acres each. Each year one strip was used, the other nineteen left fallow. Thus every twenty years a strip was ripe again for a wood supply. But very few attempted this type of conservation.

Bog iron deposits are formed by water trickling through beds of marl into strata containing iron deposits. The iron is picked up by the water in the form of iron oxide.<sup>19</sup> As the water becomes exposed again to the air, solids are precipitated and leave a reddish muddy iron deposit in the swamps and meadows and on the banks of streams.<sup>20</sup> If a bed is cleared, it will renew itself over a period of twenty to forty years. This makes the beds almost inexhaustible.<sup>21</sup> The chief furnaces in the area were Batsto Furnace, Atsion, Taunton, Gloucester, Martha and Mary Ann Forge.<sup>22</sup> There were, however, over one hundred bog iron furnaces in the pine barrens alone prior to 1850.

According to *Gordon's Gazetteer* there were 92,722 people living in the five pine wood counties, Burlington, Cape May, Cumberland, Gloucester and Salem, in 1830.<sup>23</sup> Estimates of true pine inhabitants today range from 2,000, as expressed by Nathaniel R. Ewan in an article published by the *New Jersey Compass* in October 1947, to about 5,000, a figure determined by the Federal Writers Project in their

*American Guide Series* book on New Jersey.

Let us look at some typical towns as an example. Atsion, once a great bog iron town, now has four unpainted houses and about twenty people. Both Martha and Mary Ann Furnaces are gone and there is no sign of either town or furnace except for a few bits of scattered slag. Batsto Furnace has only one cross street and two dirt trails, today called Forty Second Street and Broadway by a few inhabitants. All of the great glasshouse towns are gone in the barrens. Of them all only one can be found easily. It is the Lebanon House some miles north of Chatsworth. Here the chimney lies on its side and bits of broken glass are all that are left of the mighty glasshouse that once stood on this site.

The shipyards were also hit hard. The towns of Green Bank, Lower Bank, and Leeds Point are but shells of what they once were. Dennis Creek has not seen a large boat in over fifty years. The Mullica River is filled with empty, broken shipyards.

The sawmills are all but gone. Here and there, a one-man sawmill may be found, the great sawmills and sawmill towns of the period before 1850 are gone.

We have seen that some great destructive force has been at work in the barrens area, a force that managed in the few short years from 1850 to 1875 to wipe out this great industrial area. In its place it left a wilderness, almost without people.

This great force was man himself.

The great industries of the barrens all had one thing in common. They needed great amounts of wood, either for building or for fuel. The shipyards cut the forests from the coast inward. The glasshouses and the bog iron workers cut the forest from the interior toward the coast. About 1850 both groups met, axes in hand, and no trees between. The rich original forest growth was gone, the secondary growth came up twisted and blighted.

Man had destroyed the lifeblood of industry in the barrens. He had done it with his axe, but he also helped with his use of fire. Great forest fires not only destroyed trees, but it also destroyed the podzol topsoil rendering it impossible for a second growth to reach maturity. Today the average man is taller than a great many of the full grown trees in the barrens.

The end of the lumber and fuel supply in the barrens hit the industries in this area very hard, but other factors aided in giving this area the final deathblow. Shipbuilding, sick from the lack of good construction wood, gave up the ghost when the United States Navy at this time turned from the wooden ships to ships of metal. The rivers in South Jersey are deep enough for wooden ships but not for ships of iron and steel.<sup>24</sup>

New Jersey had iron but this also was suffering from lack of a good fuel supply. The deathblow to bog iron came with the discovery in 1850 of iron and a good fuel, coal, together in western Pennsylvania. By 1885, New Jersey was without a bog iron furnace in the entire State.<sup>25</sup>

Glass did not escape. It died in the great financial panic of 1873.<sup>26</sup> Good railroads and highways were lacking, the fuel supply was very poor, and in the Ohio valley a rich pink sand was discovered with a better supply of fuel in the form of coal.

Within twenty-five years South Jersey changed from a great industrial empire to a vast, poorly populated wilderness. Most of the intelligent industrial workers left for better area. Others stayed behind, withdrew from the outside, and gradually became an isolated and somewhat backward ethnic group.

The people who remained are today a shy, retiring, hard working people, making their living by such unusual occupations as sphagnum moss gathering (used for packing plants), cedar mining (uncovering underground cedar logs in the swamps), marl digging (a clay and lime mixture used as a water softener), charcoal burning (using a process unchanged in several hundred years), selling Christmas decorations (trees, holly, pine cones, and mistletoe), cranberry, blackberry, and huckleberry picking, and general sharecropping of small truck farms.

The area abounds in picturesque names. Towns, once of fairly good size, but now a handful of broken shacks, carry such names as Worthless City, Hog Wallow, Ongs Hat, Double Trouble, Indin Mills, Jenkins Neck, Woodmansee, Quaker Bridge, Mount Misery, and Red Lion. Most of these towns have no school, however, but transportation is usually available to the nearest school which is often twenty or more miles away. General education is at a minimum in the barren area. The "piney" is usually too shy and too pressed by economic conditions to remain long in school.

The area is rich in folklore. There are tales of mighty men of the Paul Bunyan variety, but the emphasis is on the supernatural. Mingo Jackson, the ghost of a lynched Negro, is supposed to wander along lonely paths seeking his murderers. The swamp angel is a golden-haired damsel in white who saves lost travelers from the treacherous swamps. Other ghosts are a headless Hessian, the pirate Blackbeard, a colonial soldier on horseback, a host of earthbound witches, and a phantom dog and rabbit. The former guards Blackbeard's treasure, the latter a bucket of gold which is held in reserve in case the Negroes in the area are ever again put in slavery.

However, the dominant supernatural creation of the area is the Leeds Devil.

This monstrosity, the result of an unthinking oath (a woman saying she hoped her next child would be a devil), is described as twice the size of a man, with head of a horse, body of a kangaroo and wings of a bat. To make the description complete, it has the horns, cloven hooves, and forked tail of a devil. The creature has become involved with all of the folklore attributed to witchcraft in 16th century England. It is supposed to eat small children, to lame horses and to "dry" cows. It sears corn in the fields, drives game from the forests and kills fish with its poisonous breath. It is reported to produce pregnancy in women which results in idiotic offspring. It is an omen of trouble, appearing before wars or depressions a number of times in rapid succession. Whenever it is near, its presence can be detected by the hooting of owls and the howling of dogs.

For all its forbidding qualities this folk belief appears to have some beneficial effects. For example, the pastor of the church of the Negro settlement at Pitman Grove has made the statement that there is a large increase in church attendance and a comparable decrease in drinking immediately following the appearance of the Leeds Devil in the vicinity of this town. After each visit the more adventurous "pineys" form a posse to hunt down the creature. This allows the younger generation to escape temporarily the tedium of their unexciting lives. It allows opportunity for old friends to renew their friendships, and a common ground to settle disputes. These people may live only a few miles apart, yet seldom does neighbor see neighbor.

People rationalize by blaming the Leeds Devil for misfortune instead of placing the blame on themselves or their friends. If a farmer finds his barn door open and the cattle gone, he does not blame himself or his workman but instead blame goes to the area scapegoat, the Leeds Devil, thus keeping harmony on the farm.

At night the exchange of Leeds Devil stories provides entertainment in an area where story telling is a primary source of recreation. The invention of stories provides an outlet for creative impulses, often motivated by an effort to keep up with the Jones' in the matter of stories and alleged experiences.

Finally the Leeds Devil is used as a guiding force in controlling children and keeping them close to the home after dark. It acts in this case in a capacity not unlike that of the bogey man. It must be remembered that one of the traits of the Leeds Devil is his appetite for small children, an item in the minds of all small "piney" youngsters.

Although the Leeds Devil is adorned with fearful characteristics. It is instrumental in aiding congenial behavior and moral control.

## TUPI-POLYNESIAN SIMILARITIES (?)

In April 1961 SCIENCE OF MAN published a list of unusual Polynesian words which the late novelist, James Norman Hall, had written on September 3, 1922, on one of his early trips through the Low Islands, the Paumotu or Tuamotu group. Hall stated that although he did not consider himself a linguist, the particular words he listed did not seem to him to be Polynesian and he was unable to identify them. The present owner of the list sent it to us and to other scientific journals and societies in an effort to identify the words.

The following letter dated March 21, 1961, from Dr. Frank H. H. Roberts, Jr., Director of the Bureau of American Ethnology, states that Dr. Wallace L. Chafe, linguist on the staff, was able to compare some of the words with Tupi, through a cursory search of P. Antonio Ruiz de Montoya's *Arte de la Lengua Guarani o mas bien Tupi* (Vienna and Paris, 1876):

*pítú* — to anoint (compare Hall's pituha, medicine man)

*angá* — spirit

*pety* — tobacco

*tatá* — fire

Regarding the word for tobacco, the letter also states, "Another source gives the Tupi forms *petyma* and *pítima*." Also, "In addition, the word *amah* is well known as a term used in the Orient, in European and pidgin languages for 'nurse' or 'wet nurse', from which the meaning 'mother' is not too far removed."

With these clues, the editor made a check of the words given in Kalervo Oberg's *Indian Tribes of Northern Mato Grosso, Brazil* (Smithsonian Institution, Institute of Social Anthropology, Publication #15. Washington: Government Printing Office, 1953), and from that book and Dr. Robert's letter compiled the following list:

Hall's List	Tupí	Reference
jacui, whistle	jakui, flute	Oberg, p. 51 (unidentified)
owhi, bad		Oberg, p. 112
amah, mother	ama', mother	
pituha, medicine man	pítú, to anoint	letter
anghi, a spirit	ongó, spirit	letter
temihu, taro dried	temiy, manioc	Oberg, p. 18
iret-ham, settlement	iretam, village	Oberg, p. 13
mamahe, spirit	mama'e, spirit	Oberg, p. 66
pítimi, tobacco	petyl, tobacco	Oberg, p. 24
tata, fire	pety, tobacco	letter
menuhi, a yam	petyma	letter
nadike, pretty	pítima	letter
nodehke, pretty	tatá, fire	letter (unidentified)
		{
		(unidentified)

It should be noted that the Tupis are a coastal people living mainly on the far east point of Brazil with small scattered groups inland in the Mato Grosso. (See Student Aid Chart #7, Indian Groups 21B and 25, SoM, April, 1961, p. 89 and

90). The presence of the small scattered groups indicates that at one time they apparently were a much larger group and more widely spread than at present.

Dr. Roberts cautions, however, against any far-fetched explanations merely on the basis of the similarities noted above. "Any possible investigation ought to be directed at pinning down the source of the list."

There are several points that will bear further discussion. First is the matter of Hall's methods. In his letter he frankly states that he does not consider himself a linguist in any sense of the word. At the time of publication of this article, we have not been able to find out just how much he did know about the language at the time of his death shortly after the writing of this manuscript in 1948. One could scarcely have lived in Polynesia for thirty years, however, without having absorbed some of the language. In spite of the fact he did not consider himself a linguist, he evidently did know enough of the language to recognize the words he listed as foreign. One who knew nothing of the language could not possibly recognize those words as not being the usual Polynesian.

Secondly, Hall's manuscript indicates that although he did collect a great deal of material and let it accumulate, he was to a certain degree methodical about it. His lists were grouped together according

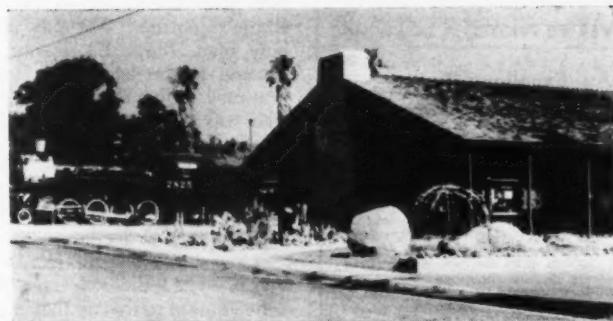
to dates or possibly areas. He indicates: "It was with the lists of my early 1922-23 voyages . . . it must have been in the Low Archipelago." (Low Archipelago, Paumotu or Tuamotu Islands, east of the Society group — Tahiti.) The fact that he took time to retype the list — the original he says ". . . was now faded" — indicates that he was methodical and recognized the importance of the list. The way the original list was written to me indicates that at that time (1922) he was not at all familiar with the language and did not recognize these words as foreign or unusual. Had he done so he would have compiled them more accurately at the time.

The list also indicates that he was not familiar with the procedures for interviewing an informant or with using the usually accepted phonetic sounds. Comparing these words with the Tupi words supplied by the Bureau of American Ethnology—if these are truly Tupi words, a conclusion which we must not jump to at this time—one notes first the absence of accents on some syllables in Hall's lists, *tata*, for example instead of *tatá*. In *mama'e* one notes the substitution of an "h" for the glottal stop: *mamahe*. In *iret-ham* one notices the addition of a hyphen (possibly for what sounded like a glottal stop to him) and an "h": from *iretam*. In the word, *nadike* or *nadehke*, the "old woman," possibly the wife of the informant, seemingly notices a mispronunciation in her husband's speech, which Hall tries to record with an "i" in one case and an "eh" in the other.

It seems obvious that Hall travelled a great deal in the Islands, particularly in

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his earlier days there. This is also indicated by his published writings. He remembers his 1922-23 trip after a span of 25 years, but could he be expected to remember Hopemea, the little unimportant island he had visited only once so long ago? Likewise he could not be expected to remember his informants whom he had met only once, hence, his remarks in his last paragraph.

Two other points seem significant in connection with the credibility of the Hall document. First, Hall, himself, did not believe in any East to West migration of the pre-Polynesians. We have in our possession a signed letter, written in response to a letter from the editor asking about his theories in regard to the Kon Tiki expedition, absolutely denying any belief in an East-West migration.

Secondly, the editor of this magazine was for more than twenty years a professional criminal investigator and a recognized expert in the comparison of handwriting and questioned documents. A comparison made by him of the signatures on Hall's Kon Tiki letter dated June 1, 1951, and on a photostatic copy of the Hall's "Unusual Words" manuscript indicates that they are unquestionably the same.

The manuscript in question was sent to the editorial office of SCIENCE OF MAN in July or August of 1960 by the present owner, a seaman and apparently an amateur.

It is understood that the letter was also later sent to the American Anthropological Association sometime after that for possible publication and identification. To how many other scientific organizations for the same purpose is not known, but it apparently had been the owner's intention to send it to several. The original manuscript has since been lost in the mails as Benson, the present owner, has never received it back. While the letter was in this office, we did have time to make a cursory examination of the paper. "The article is typed and is on a rather rough white paper, now quite wrinkled, apparently from continued exposure to the salt water or salt air. . . . It apparently was a first draft, however, as it contains several errors in punctuation. While we would like to have kept the paper a while longer for photography and study, we were asked to return it as soon as possible so that it could be sent to other publishers and scholars for possible identification." (SoM, April 1961, p. 104.) It should also be noted that the manuscript was clipped by a rusty paper clip and that marks of the rust are still visible on the photostatic copy.

### NALAC Conference at Bloomington Museum

Plans are under way for the annual conference of the National Association of Local Anthropology Clubs at the San Bernardino County Museum at Bloomington, Calif., this summer. The date will be announced as soon as it is set. Contact Dr. Walter H. Schuiling, P.O. Box 538, Bloomington, Calif., for information.

### Club News and Deadlines

If clubs and societies will send in the dates for their meetings, field trips, conventions, etc., far enough in advance we shall be glad to publish them. Thus far, all such news has been received too late for publication.

Because of newsstand sales, SoM is published two months ahead of the publication date, thus allowing them to remain on newsstands a full two months.

Magazine Date	Deadline	Mailing Date
FEBRUARY	November 10	December 26
APRIL	January 10	February 15
JUNE	March 10	April 15
AUGUST	May 10	June 15
OCTOBER	July 10	August 15
DECEMBER	September 10	October 15

Any other material which the clubs, authors, advertisers, or other contributors wish published on a specific date must arrive in Mentone before those deadlines.

### Our Cover . . .

Benjamin Black Elk of Keystone, South Dakota, is a latter-day Oglala Sioux warrior. Now about 65 years of age, Black Elk reveres the old ways of his nation and combines his heritage with the technology of the twentieth century. The son of Black Elk, famed holy man of the Sioux Confederation and confidant of Sitting Bull and Crazy Horse, Benjamin Black Elk has travelled the world, too, making a name for himself. He tells the truth about his people and their struggles to maintain their identity in our civilization that gives lip service to individual and ethnic minorities. Not only the son of a holy man, Black Elk is also a cousin-german to the late Chief Crazy Horse. Contrary to popular opinion, it was he who was the actual tactical commander of all the allied Sioux and Cheyenne forces at Little Big Horn. Black Elk's contention that the Indian forces could have overwhelmed all the White Eyes, both military and civilian, after the victory over the Seventh U.S. Cavalry, is factual. "The Indians, you see, just wanted to be allowed to live on their treaty lands. Killing was not their desire," is the way he put it. We believe Black Elk was, and still is, right. I wish him long life and peace. *Cover picture and story by Joe H. Wherry.*

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### Our Sincere Thanks

We wish to thank A. J. Nystrom and Co. and Mr. G. J. Carlson of that company for their kind permission to use their outline maps as illustrations in SCIENCE OF MAN, three of which may be found in this issue.

The Nystrom Desk Maps are excellent outline maps for anthropologists and students in their work and study. These maps, in three sizes, are available for most areas of the world for as little as three to ten cents. Catalogues are available from the company (3333 Elston Ave., Chicago 18) without cost.

### Brazilian Mounds

CONTINUED FROM PAGE 151

techniques for obtaining this food allowed them to live along the Brazilian coast for thousands of years before they began to adopt new ideas such as more efficient curved bone fishhooks and, later, fired pottery. The fact that practically all artifacts were found in the upper half of the deposits and that the yield increased steadily toward the surface illustrates the principle of cultural accumulation which accelerated rapidly after ideas began to be adopted from elsewhere.

Although work has been terminated at

Did you know that there are two Golgothas and two supposed tombs of Christ?

the Forte site, it will be necessary to excavate other *sambaquis* on São Francisco Island in order to reconstruct the history of man and his relationship to the changing environment during the many millenia he occupied the island. This story can be reconstructed only if the remaining *sambaquis* are not destroyed for building roads or making cement.

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#### Scrolls

CONTINUED FROM PAGE 156

made in the early days of Christianity, of early books which had been hand copied and recopied, as well as translated and retranslated, each translation and each copying introducing errors. Finding copies as early as the Dead Sea Scrolls—much earlier than any translation or copy we had previously—can do much to correct our translations.

Historically, the Scrolls are priceless. They help fill in the gaps in our history of the area and time period in which a number of our major religions developed. Judaism, Christianity, and Islam all developed in the same area, largely from one source, old Israel. The Scrolls were written or compiled by Jews in the period that had its effect on all three. Who were these people? What was their organization and why did they believe as they did? Were they the Essenes about whom Philo and the other early historians wrote? Were John the Baptist and Jesus members of this group in their earlier years? They could have been, and many of their teachings indicate that they were either members or knew of and drew from their teachings. These are things which it is hoped can be solved through a careful study of the Scrolls.

To those interested in doctrine and theology itself, apart from history, the Scrolls are important. If it is discovered that John or Jesus was a member of the group or studied with the group, how will it affect their status in relation to

the doctrines of our present beliefs? Who was the Messiah of which the Scrolls speak? Was he Jesus, whom we call Christ (the Greek word for the Jewish "Messiah"), the Messiah mentioned in the Scrolls so frequently, or was there another? Most scholars think they awaited another. It is from the custodians of the Scrolls that Jesus obtained his idea of messiahship? Did John get his idea of baptism from the Qumran Covenanters who preceded him in teaching baptism? Did Jesus' idea of the "Last Supper" or our idea of the Sacrament or Holy Communion really come from the Dead Sea group who also had a similar practice?

These and many more questions may be solved through a thorough study of the early manuscripts we now so commonly refer to as the Dead Sea Scrolls.

#### GLOSSARY

**Apocalypse** — A writing with a cryptic meaning. Apocalypses were very common during and after the inter-Testamental period and during any period of foreign occupation. Through these books the Jewish sects were able to propagate their religion under the very eyes of the occupying soldiers who thought the books mere rubbish. **Daniel**, written in the guise of a history of the time of Nebuchadnezzar yet carrying the message pertinent to the time of writing, is a perfect example of an apocalypse. It is one of the only two apocalypses retained in the present Protestant Bible.

**Apocrypha** — Religious writings that came into existence after the Jewish scriptures had been translated into Greek; hence the earliest copies of these would be in Greek, not Hebrew. To many of the stricter sects of Christendom, the Apocryphal books are considered "false," hence the name **Apocrypha**, meaning "hidden writings," has become attached to them although that implication is itself false.

**Essenes** — A Jewish sect described by early historians but not mentioned in the New Testament. Believed by some to be the same as the Qumran Covenanters. Since the Qumran group was apparently nameless and seemingly wished to remain so, and since no such group is mentioned in the New Testament, some have been convinced that Jesus and the Gospel writers were members of that group.

**Gemara** — The commentary on the Mishnah, or explanation of the oral law.

**Islam** — The religion of the followers of Mohammed, popularly called Mohammedan.

**Law** — See Torah.

**Metropolitan** — Title of a leader in the Greek Orthodox Church comparable to a Catholic bishop.

**Mishnah** — The oral or traditional law of the Jews, based on the Pentateuch.

**Pentateuch** — Scientific or Greek name for the first five books of the Old Testament, sometimes called the Books of Moses.

**Qumran** — The name of a dry river bed near the Dead Sea.

**Qumran Covenanters** — The modern name given to the nameless Jewish sect who owned the Dead Sea Scrolls and who wrote many of them.

**Qumran Literature** — The ancient religious material found near the Dead Sea on the Qumran Wadi.

**Scroll** — An early writing having the pages pasted or sewn together, side by side, to form a long roll. Used before the invention of binding.

**Septuagint** — The translation of the Bible into Greek. According to tradition, this translation was made by seventy scholars from Jerusalem by order of Ptolemy II about 270 B.C. Hence, the name from the Latin, septuaginta, seventy, and the abbreviation LXX.

**Talmud** — The complete law of the Jews, consisting of the Mishnah and the Gemara, the oral and the written.

**Targum** — A paraphrase in Aramaic.

**Torah or The Law** — The Jewish names for the Pentateuch which constituted the basic religious and secular law of the old Jews.

**Wadi** — Dry river (Arabic).

#### Ceramic Repair

CONTINUED FROM PAGE 170

are dug up as sherds by the archeologist. Pressure of the earth may have built up stresses and as the artifact was broken, those pressures were released so that the object will no longer fit together.

Don't be upset if your "pot" won't go together for the latter reason. Just be sure the mistakes aren't yours and do the best you can. There are ways you can actually fill up cracks which will be described later.

#### Cleaning

Surplus cement that may have been forced out of the cracks during mending may be removed almost anytime during repair although it is best to let it remain on until the rest of the glue is reasonably well set. It may be washed off with a damp cloth, or scraped off with a razor blade. The vessel should be cleaned well of any glue stains, as drying glue will give that spot a glossy appearance.

Joseph E. Vincent

#### Amateur Archeologist Finds New Cache of Dead Sea Scrolls

During the last week of March an amateur archeologist . . . found some 70 fragile documents in the general area of inquiry of the Dead Sea Scrolls. It should be remarked that these were promptly turned over to the constituted authorities. (*Interamerican*, May 1961, p. 2.)

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## Book Reviews



**ARCHAEOLOGY AND SOCIETY: RECONSTRUCTING THE PREHISTORIC PAST**, by Grahame Clark. New York; Barnes and Noble, 1961. 272 pp., 52 illustrations in the text and 24 black and white plates. Publication date, June 1, 1961. \$1.95. Review by Joseph E. Vincent.

The title of this excellent book is very misleading. The subtitle, "Reconstructing the Prehistoric Past," is a much more accurate and descriptive title. The book is actually an entirely new rewriting of an earlier book of the same name published in 1939. The present edition, however, is much more complete, more up to date, and better organized than the original book, but follows the author's original plan. In this book, Prof. Clark shows how archeology is used to elucidate the prehistoric past. It therefore will be an excellent textbook either for the amateur studying at home, or for a class in general archeology or in pre-field training.

In his first chapter, the author discusses archeology and prehistory in general, defines terms, shows the geographic spread of archeology, and defines his approach. In the next two chapters he goes into the avenues of discovery, such as urban development, quarrying, etc., into surface indications, a discussion of materials and the effects of climate, geological forces, and human behavior.

Dr. Clark follows this by chapters on morphology of sites, sequence, relative and absolute chronology, etc. His final chapters very appropriately go into the methods of reconstruction of the cultures based on the evidence excavated (economic, social, intellectual, and religious aspects) and finally shows how a knowledge of the past relates to us today.

Faculty members will do well to consider the teaching value of this excellent book in both general archeology courses and in pre-field training. Amateurs will find it not only an entertaining but a challenging and educational book as it contains much how-to-do information.

**THE INDIANS OF TEXAS** by W. W. Newcomb, Jr., Austin 12: University of Texas Press, 1961. 363 pages, 12 figures, 13 plates, 4 maps, bibliography, index. \$5.75.

*Texas Archeology*, bulletin of the Texas Archeological Society, has announced that the above book by Dr. Newcomb is now available. It states, "For the time being, this is the last word on Texas Indians, and it will certainly be the standard reference on the subject for many years to come. . . . The drawings by Hal Story are an especial pleasure. This book is

crammed full of information on the history and ways of life of all major Texas tribes. It is a prime example of good anthropology, good history, and good writing. A thoughtful book for thoughtful people. We recommend it highly."

*The book can be obtained from Mrs. Mardith K. Schuetz, Sec.-Treas., Texas Archeological Society, Witte Museum, Brackenridge Park, San Antonio 9, Texas.*

### Out-of-Print Books

The OP Book Service of the University Microfilms, Inc., Ann Arbor, Michigan, is a boon to anthropologists as well as others in need of out-of-print books.

The company maintains microfilms on many technical and semitechnical out-of-print books and journals, as well as some magazines. When copies are needed, prints on paper similar to regular book paper are made by the Xerox process, which in turn are bound like books—all for a very nominal fee.

The method of binding is unique, yet the results are excellent as well as inexpensive.

Two pages of an open book are photographed, crosswise of the microfilm negative. This allows photographing the maximum area on a minimum space. After printing by the Xerox method (a continuous roll process) on a good grade of paper, the double pages are cut apart, the two adjacent pages remaining together. The two pages are then folded back to back, so that what were originally two facing pages are now two pages back to back. That allows for binding on the cut edges, leaving the folded edges out. The pages are then stacked and the folded edges aligned neatly together. The opposite side is then trimmed and bound (padded) with a padding cement like that used in making a pad of writing paper. A light weight gray cover is then added with an attractive title.

The result is a good looking copy, economically made—a suitable substitute for the original which is no longer in print. The major difference between the copy and the original is that what was originally a left-hand page is now a right-hand page. This makes little difference when one needs an economically priced out-of-print book. Although the pages are back to back, making a double thickness of the paper, the thin, yet strong paper used results in a page very little thicker and no clumsier to handle than the original page.

Besides the paperback binding described above, copies may be made on better paper and bound in cloth like a regular book at a slightly higher but still reasonable cost.

In many cases the purchaser is only charged for the Xerox copy and not for the microfilm negative (or perhaps not for the full cost of the microfilm negative).

## Dear Editor:



Dear Editor:

Last week while returning from San Antonio, I . . . stopped . . . just five miles east of Fabens on the highway from Del Rio to El Paso. I found many pieces of flint and other types of chips, large broken pieces of pottery, one broken projectile, and a piece . . . that looked like jade to me. All the pottery was within a small area, perhaps a hundred square feet. It took me only five minutes to sack up a gallon of this. . . . Please pass this information on to the professionals concerned so that it might be investigated further. . . . North side of highway, just few hundred feet east of road sign "Fabens 5 Miles" . . . a few feet east of a culvert where I swung off the road into the small sand hills. There is lots of refuse . . . Seven-Up bottles and Pond's cold cream.

John A. Chumley  
Tennessee Archeological Society  
7734 Sterling Avenue  
San Bernardino, Calif.

Texas professionals have been notified.  
Ed.

Dear Editor:

. . . I've discovered 147 new archeological sites to date and expect to get between 600 to 700 in the Tehuacán valley area before I finish my survey. Our cave excavations have gone beyond expectations—we are getting preserved plant materials from about 8,000 years ago, including corn from about 5,000 to 6,000—as well as lots of basketry, cloth, sandals, thread, etc. We have several hundred pounds of vegetable material—thousands of corn cobs, beans, squash, nopal quids, etc., besides several hundred projectile points—including Lerma, Midland, Flacco, Almagre, and others of northern regions, besides new types. Our preceramic material is excellent and will go a long way towards defining the transition from hunting to collecting to agriculture.

Fredrick A. Peterson  
Tehuacan, Puebla.

Mr. Peterson is the assistant director of Tehuacan Archeological-Botanical Project (Proyecto Arqueológico-Botánico Tehuacan) of the R. S. Peabody Archeological Foundation, now operating at Reforma 204, Tehuacan, Puebla, México, under the direction of Dr. Richard S. MacNeish. We are always glad to get current information on the progress of the work in the field and willingly publish it for the use of other anthropologists, both professional and amateur. Another informative letter of Mr. Peterson's will be

*found in the Interamerican, May 1961,  
p. 5. Ed.*

Dear Editor:

The expedition [B.Y.U. field trip to Aguacatal] has returned and the preliminary results are interesting. The wall does not go all the way around the site. In fact there is some question as to whether it is a wall. Bruce Warren [formerly of the New World Archeological Foundation in Chiapas] has checked the ceramics. The aerial survey made by Ray Matheny of the expedition also revealed some nearby sites as Cerrillos and Zapotal are larger than Aguacatal. Whether or not these have walls around them has not yet been determined.

Dee F. Green

Brigham Young University, Provo, Utah

*Earlier news of the group from the Department of Archeology of Brigham Young University will be found elsewhere in this issue. Complete report of the expedition will be found in the coming issue of the U.A.S. Newsletter which Mr. Green edits for the Department. Ed.*

Dear Editor:

Writing "American Indian Origins" has been a most interesting venture. When I sought help from good friends, I was urged to drop the matter entirely. Only Carl Compton told me to go ahead. It was said that I was ignorant of the problem. This I freely admit. Dr. Compton, however, felt that the same may be said for all of us.

Letters continue to come in, grumbling that Ridley was wrong, that I am wrong, that parallels do not indicate connections, etc. Maybe so—how come the enthusiasm over similarities in two potsherds separated by a continent, and the outright rebellion over mention of similarities which involve several thousand items on a trait list? If there is no connection, let us prove that there is none, instead of

muttering and grumbling. And let us be consistent.

I've learned a lot from this—and I've made a lot of new friends and contacts. It seems that I am not alone in my dissatisfaction with the currently accepted doctrine of the origin of the Indian. I've received scathing denunciations of the botanical statements coming from archeologists, for example.

Knowing full well that my views might not be received with enthusiasm by the profession, I submitted my paper to others for candid criticism. An Icelander, intimately familiar with the North Atlantic and the Arctic, finds no error in my statements about the North. Leslie of Pennsylvania is enthusiastic as you will see. Ridley approves. I can safely predict that European scholars will approve. In fact, my paper has already raised the possibility of my being invited to a world conference to which no archeologist was invited. So far so good.

Thomas E. Lee

1575 Forlan Dr., Ottawa 3, Ontario

Dear Editor:

I received the letters of Mr. Richard Owens and the photos which you sent concerning the petroglyph "Caballito Blanco." I am amazed that an American student would be so gullible as to believe the statements of one lone informant, even though he is don Nicholas. I have worked in that area for many years, first going there in 1923 as a sociology student on my first big project. I have worked in that area numerous times since, the last time in 1958 at which time I met don Nicholas. While he is a good man and a usually reliable informant, he is either mistaken or is joking Mr. Owens and his partner.

I, too, wondered about the naming of the petroglyph when I first saw it. But in the number of years that I have visited the area and have talked to native peoples about it, I have never had any other

explanation than that this particular usage of "caballito" meant water skipper. It is true that there are other pictures on the cliff face in question. I tried to photograph them with a Leica and telephoto lens before the war. Because of the peculiar lighting conditions my photos are not absolutely clear, but they are sufficient to show that there were no horse petroglyphs at all in the area indicated by Mr. Owens. My earliest photograph of the cliff is now over thirty-five years old, and the pictures then were much clearer than now.

It is my suggestion that the matter be dropped. Don't allow yourself to become involved in such matter, one so long ago and so well established.

Dr. Rolf Himmelweiss  
Frankfurt am Main, Germany

Dear Editor:

About your problem of Caballito Blanco. So far as I know Dr. Himmelweiss is perfectly correct in what he says about the pictograph. It is considered by the people of Mitla to represent the water skipper.

As far as the hieroglyphs incised on the rock, I copied all of them from the squeezes that were made and they are Monte Albán II without question of doubt. Their style and delicate incising leaves nothing to doubt. I don't know what Caso or Bernal thought. But they are Monte Albán II hieroglyphics. And the buildings and pottery on top were Monte Albán II, polychrome brazenos, etc., fragments, made by the same hand as a fairly complete one in my collection.

Apart from Monte Albán, this is one of two instances of M. A. II hieroglyphics yet to be found. The other instance is near Tlaquiacao in the Mixteca. . . . If we could only find some more M. A. I glyphs that would be something.

Howard Leigh  
Mitla, Oax.



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## Surface Hunter

by Arthur George Smith



A great part of the laboratory work in any archeological museum is the cleaning and restoring of the artifacts obtained from a dig or from a surface collection made in a reconnaissance of an area.

Now some things should never be cleaned. These are things like cache items that have been covered with red ochre or pigment. Items that have an incrustation of a limy deposit or caliche, which shows the age of the specimens should not be cleaned. It may be necessary to clean one face of a flint covered with a crust, to show the nature of the material. This is done with a brush and DILUTE hydrochloric acid. Hold the piece in your fingers, point down so that the acid does not run onto the other face. When you are through cleaning anything with hydrochloric acid it must be washed thoroughly. First put it under running water, then in a pan of water rendered basic with a few drops of ammonia. If the material is at all porous, it may take several days and changes of water to remove the last traces of acid. All chlorides swell up by absorbing water, and this can wreck a specimen.

The ordinary specimen with nothing on it but dirt can be washed. I scrub off the worst of the dirt, then put the specimen into a pan with a detergent and boil it. This loosens up the very fine silt that sticks to the stone. Then I scrub it with a soft brush. A lot of this fine silt is nothing but iron oxide stain from the soil and it is startling how often it dulls the natural color of the stone.

If you have artifacts from a collection that has been lying around gathering dust, dirt, and grease from handling, first boil them with a detergent. Then when you scrub them with a soft brush, the real colors show up. In fact, specimens will gather this grime and grease even in a display case.

If any specimens show a patina, go easy on the cleaning. Some patina will rub off with handling. This may be noted by shiny spots.

Flint, chert, quartzite, etc., are the easy things to clean. Chipped slate, argillite and slate must be handled more carefully as the patina may be removed entirely.

Ground slate usually has altered by weathering until the surface when washed is dull and does not show the grain of the stone which is sometimes very ornamental. Old-time collectors used to scour off this greyish or white deposit, using anything from scouring powder to an emery wheel. This destroys all evidence of age and makes it hard to determine whether a piece is genuine or a fake made to sell to the unwary collector. So if you have a slate piece that shows an ornamental grain when wet, but not when dry, and you wish to bring out its beauty, don't destroy the surface. Instead, grease one side of it with an animal grease, it doesn't take much—just rubbing it on your hair or skin will bring out the grain. That is the way it was greased when the Indian wore or handled it. Never use any sort of a mineral oil, as it is almost impossible to remove. Hot water and soap will take the grease off the specimen as it does off your skin. Doing this enables you to show both the beauty of the stone and its patina or alteration from weathering.

Pecked stone is hard to clean thoroughly. You may think it is clean but try scrubbing it with soap and water. That fine silt in the pores of the stone sticks like glue. In my area we find some very fine celts made of a grey green silicified slate. They have only the bit ground, the rest being very finely pecked. Picked out of our yellow clay or brown loam and just washed, they are still the color of the soil. Repeated boiling with a detergent, and hard scrubbing with soap lightens the color of the stone each time until it is snowy white. These are very striking specimens when displayed.

Very often you find a specimen that has been struck by a plow or cultivator that left a nasty streak of rust in the stone. This is easy to remove. Get a tube of Minton's rust remover at the drug store. Women use it to take rust spots from clothes. Smear a thin layer of it, just enough to wet the stone all over, then put on a gob of the jelly over the rust streak, let it dry and wash it off. Usually one application is enough, but if not, repeat. This remover will even take out rusty looking spots on tools made of some igneous rock. If you have a celt or axe with a nasty looking brown stain try this rust remover; repeat applications until it is gone. A word of warning: never use rust remover on banded slate. This stone weathers to a yellow green, from a blue green, and rust remover in taking out the mark of the plow, also changes the color of the stone to its original shade. In that case it is hard to tell whether it is genuine or a recent fake. Usually it is impossible.

Bone and antler artifacts should be allowed to become thoroughly dry before you attempt to clean them. Use lather and a soft brush. When you are through, brush them with animal fat, if sound and hard. If they are soft and crumbly, spray them with a preservative such as Acme-loid.

If you are lucky enough to find a wooden artifact that is waterlogged, do not allow it to dry even for a few minutes. Keep it wet. Waterlogged wood is very soft, so slide a piece of tin under it and lift it out, dirt and all. Wrap it in wet rags, and keep it wet until you get home. Then put it in water. Write to me and I will send directions on how to preserve it in such a manner that it will not shrink or crack. The address is on page 147. Such things as wet matting or textiles should be sprayed with a preservative several times before you move them.

If you find a copper artifact, stop as soon as you see the green of the copper salts in the dirt. Take it out with all the copper stained dirt you can. It is possi-

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ble to restore it to its original shape, if you care to take the trouble. Never under any consideration clean the corrosion from a copper artifact. If the corrosion is just a green coating, or a brown or black coating, do not try to bring out the metal itself. I will send directions for restoring copper electrolytically, if you write. Too long for this column, like restoring wood. I welcome letters of inquiry from serious students who aspire to become amateur archeologists, not merely curio collectors.

Now for some tips on restoring specimens. The simplest job is repairing a broken flint. Flint, particularly the finer varieties are hard to cement. Duco cement will hold some, but the new epoxy resins will hold anything. I usually use Duco cement for a simple break. Clean the fracture, smear Duco on both surfaces and press them together with your fingers for a few minutes, then set the piece in a box of bird gravel or rice or corn to support it until it dries. After it is set, clean off any excess with a sharp knife or razor blade.

Perhaps you have a fine piece, only the tip is broken off, or a barb is missing. These can be restored. All it takes is a little ingenuity, a set of water or oil colors and a little artistic ability. There are many things that can be used for repair. Don't laugh, but the first repair material I used was just old fashioned chicle chewing gum. There are still some points in my collection with tips or barbs restored with chicle that are still in good shape after over fifty years. To use chicle, heat second-hand chewing gum in a spoon until it stops bubbling, dip in the broken surface while it is hot, then build up with the gum when cool enough to shape. It can be carved or even chipped to match the chipping of the specimen. Always run the gum past the break on the side you don't show, to act as a brace. The side displayed can be colored with oil paints, but this material is best used on dark flints.

The best all-around mending material is Durham's wood putty. It is cheap, easy to use, sets hard and takes colors beautifully. You can carve it after it is dry to match the chipping. It has the same surface texture as chert or rhyolite. If your specimen is made of a glossy flint, you have to paint it with nail polish after you have colored the repair, until the surface textures match.

I use sealing wax, and cabinet makers' stick shellacs for certain repairs, usually where a piece has been knocked out of an edge. If you use sealing wax, mix your colors with alcohol when you paint the repair. Cabinet makers' stick shellac is filled into place with a hot spatula. It is the best mending material for semi-translucent colored flints. If the break is large, use a base of wood putty, but do not fill the gap full, leave room for

the shellac. Not long ago I had a very fine flint celt of semitranslucent chestnut brown flint. I used wood putty for a base, then walnut shellac, then a thin layer of transparent shellac, to give the appearance of transparency. Such a job properly done is a work of art.

You may have a very fine celt with a chip out of the bit. Use wood putty and color. Wood putty when hard can be polished. You can restore a slate gorget or a bannerstone with this wood putty. You may have just a half and you wish you had it whole. Restore it. For a bannerstone, get a dowel the right size to fit the drilled hole. Grease it so it won't stick, and build up the missing half. Make it larger than the proper size and whittle it down, using an outline of the wing you have as a guide. When you have it shaped, paint it. I paint only one face. If you have to repair a pecked surface, peck the repair with a pointed chunk of flint and you will get a good match.

Epoxy resins are new. They cling better than anything else but they are ticklish to use. For obsidian or quartz they can not be beaten. Mix a bit of lampblack to get the right shade for obsidian. The lack of grain in a repair of quartz is immaterial. From experience I have found that plaster of Paris is not good for repairs, it is too weak. I will admit it is ideal for repairing pottery, but what I don't know about repairing pottery would fill a year's issue of this journal.

Plastic wood does not cling to stone, and it shrinks as it dries, so you have to put it on in thin layers and you never can get a nice joint.

The secret of making good restorations is color. You need plenty of different ones, and to know how to mix them to get the proper shades. You also have to have a supply of small, artist's brushes. I have ground up fragments of slate or rhyolite in order to get an exact match in color, using the powder for pigment.

If you are restoring a banded or mottled specimen, first give the whole surface to be painted a coat of the base color. On this, add the lines or spots of other colors using the brightest shades last. Black lines can be made with a very soft pencil, then smudge them with your finger to give a natural look. Don't be in a hurry. Take your time. If you have real artistic ability, restoring broken artifacts for your friends is one way of picking up a legitimate profit from your hobby.

If you repair a broken pot, filling in the gaps with plaster or wood putty, and want to color it, remember, the Indian used earth and mineral pigments. You should also. For the ground color of a pot, I have found that the easiest way is to find a stray sherd in the box, of the same shade, scrape off the surface and use it for pigment.

Restoration is work but it is a lot of

fun, and it gives you a great opportunity to use your ingenuity. If some Indian was smart enough and enough of a mechanic to make it, surely you should be able to repair or restore it.

## Texas Archeology

In the May issue of *Texas Archeology*, the newsletter of the Texas Archeological Society, is the following resume of an article on "How to Dig" that is expected to appear in the next issue of the newsletter.

### How to Dig

This is about archeology, not relic-hunting. The objectives are to learn about (1) the layers of earth and (2) which features are found in which layers. (A "feature" is either an object of something structural like a fireplace or a filled-in pit.) You keep a record of your work in a notebook as you go, and you carry on a neat, orderly dig. Measurements are not guessed, but are made with rule or tape. The beginner should select a likely spot (based on surface finds) and dig a square hole, three feet on a side. Dig down six inches, saving all objects found; then level the floor and scrape it and the walls clean.

Record in the notebook the appearance of the floor and walls, and note what features were found during the digging of the six inches. Objects found go in labeled paper sacks, one sack for each six-inch level. Keep going down six inches at a time this way, until nothing more is found; then go a little deeper to make sure.

Go home and write yourself an account of the work, keeping Objectives (1) and (2) in mind, basing the account on the notes and specimens more than on your memory. And that's all there is to it. Well . . . almost all.

There are many ins and outs. Remember, the thrill of digging comes from recovering interesting features, but the justification for digging comes from recovering and preserving information. If your digging destroys information, you had better stick to surface hunting.

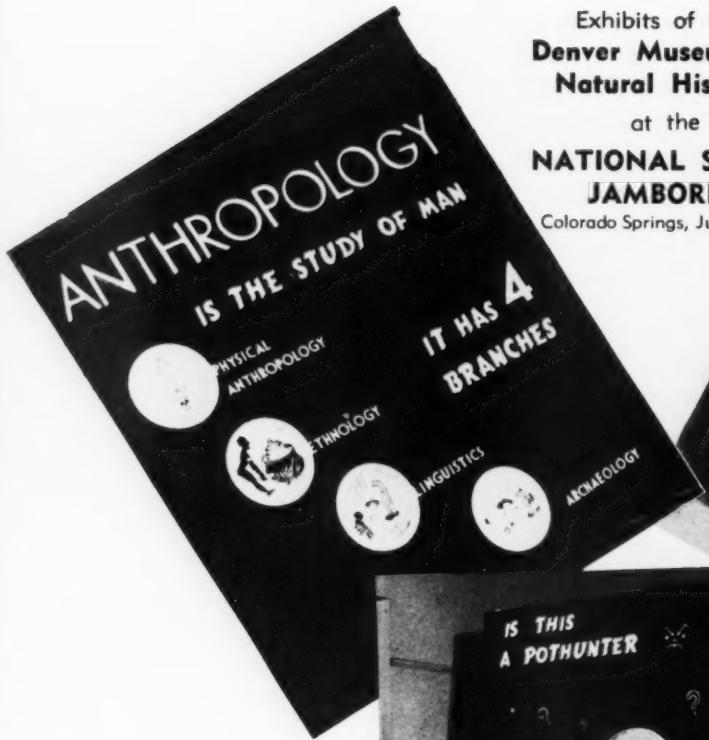
Those interested in obtaining this issue should contact E. Mott Davis (the editor) at the Department of Anthropology, University of Texas, Austin 12. Hobbyists, take note!

## Maya Calendar Correlation

Dr. Charles H. Smiley has a new correlation based upon a study of the dates of eclipses in Mesoamerica which occurred during certain planetary conjunctions which are recorded in Maya glyphs. This new study supports the Spinden correlation over the Thompson-Goodman. (*Boletin de Centro de Investigaciones Antropologicas de Mexico*, No. 10, 1 Dec., 1960, and *Interamerican*, Vol. 8, No. 2, May 1961, p. 2.)

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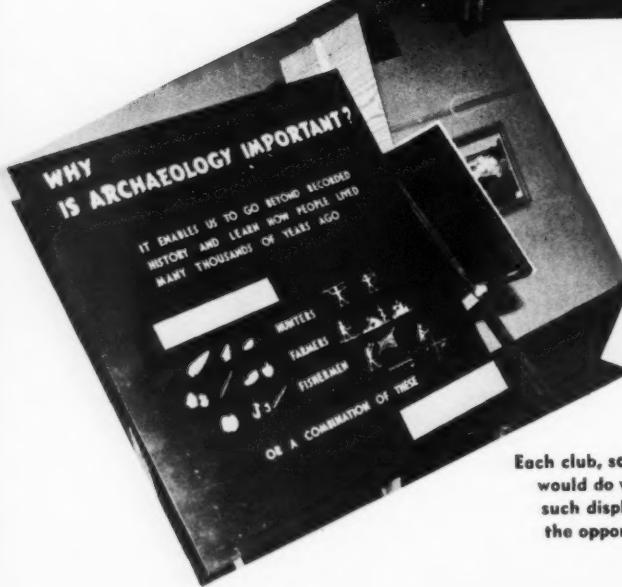
Colorado Springs, July 1960



Courtesy of



Dr. H. M. Wormington



Each club, society or museum  
would do well to present  
such displays whenever  
the opportunity arises.

